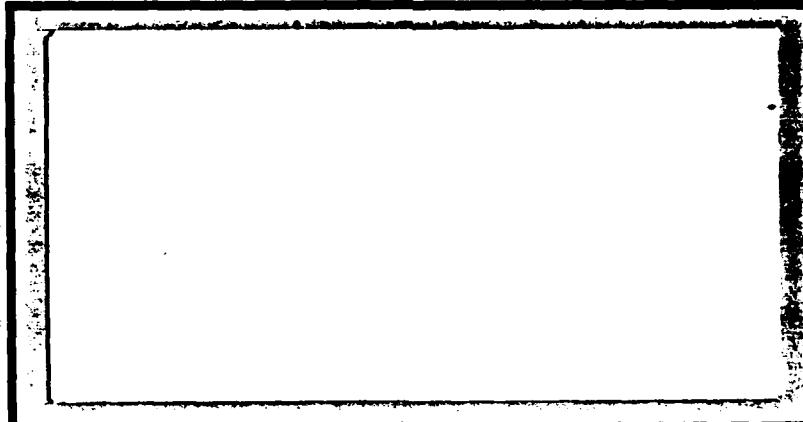
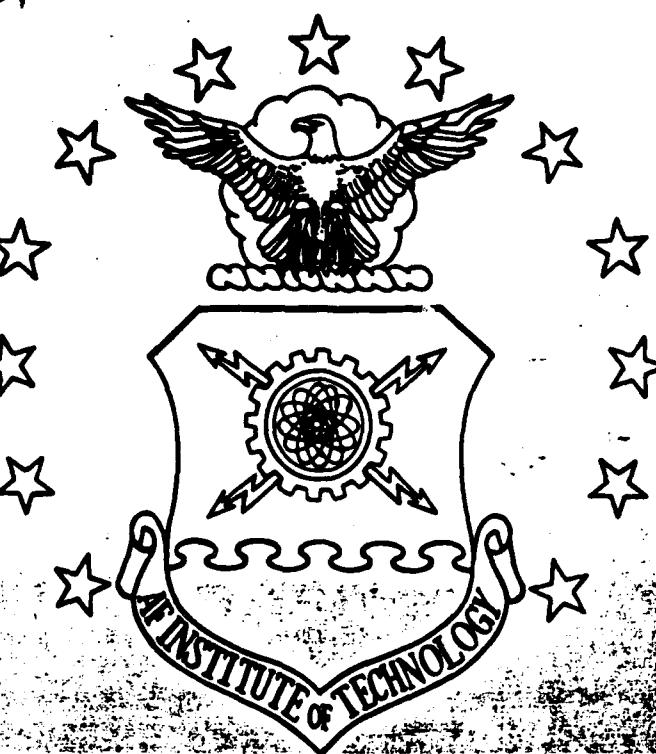


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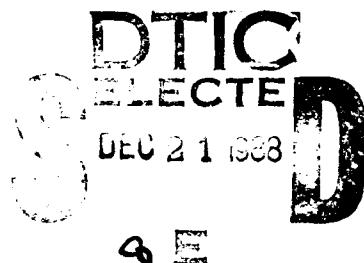
AFIT/GCA/LSY/88S-10

THE EFFECT ON FAMILY INCOME OF
VARYING THE FREQUENCY OF PERMANENT
CHANGE OF STATION MOVES

THESIS

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Captain, USAF

AFIT/GCA/LSY/88S-10

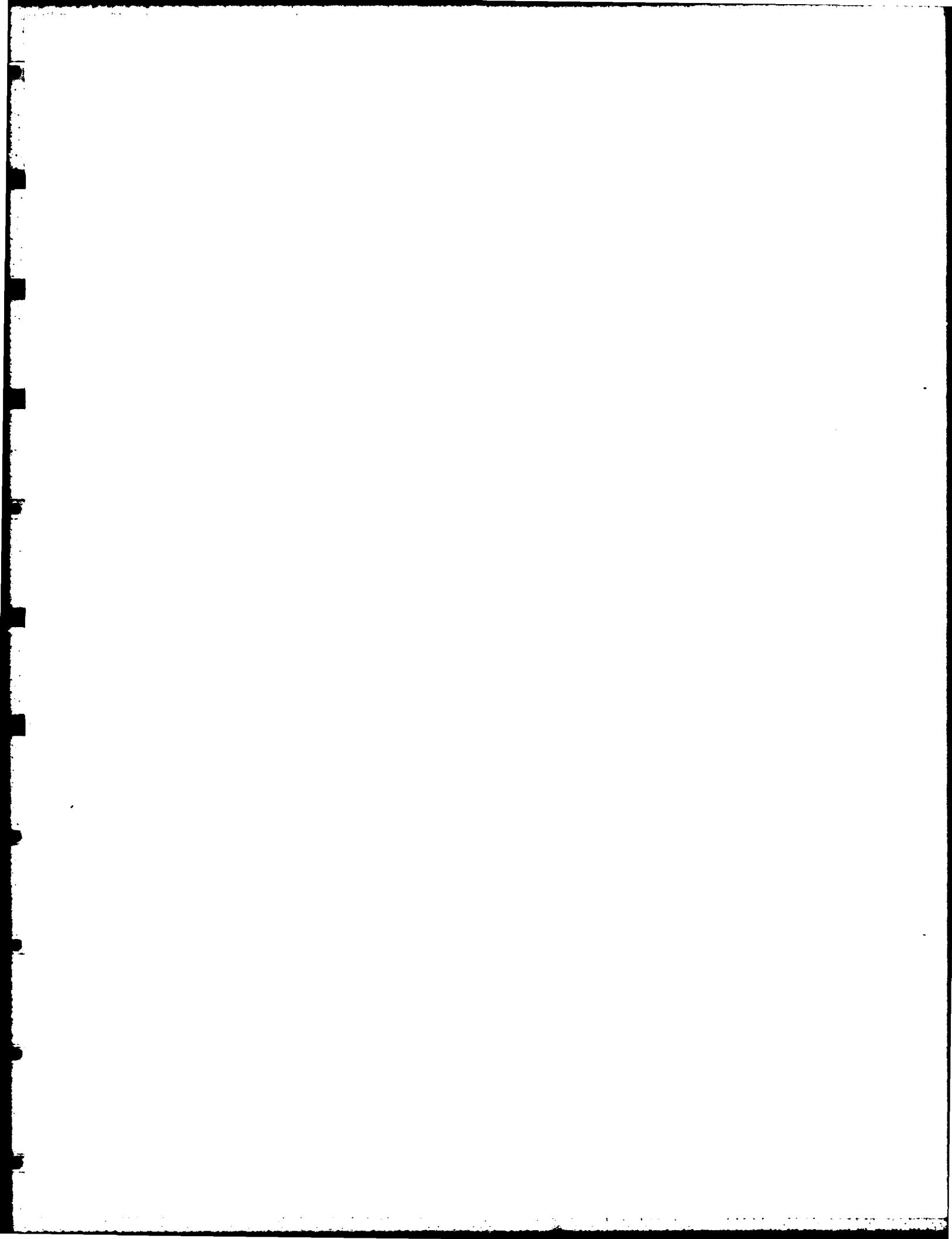


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THE EFFECT ON FAMILY INCOME OF
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CHANGE OF STATION MOVES

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Cost Analysis

Rodney M. Troyanowski, B.S.

Captain, USAF

September 1988

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Rodney M. Troyanowski

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Abstract

This study analyzes the effect varying the number of permanent change of station (PCS) moves during a 20 year military career has on total family income. The number of PCS moves was varied from 5 to 9 over the 20 years to determine the effect on officer and enlisted family income for each of the services. This study limited the population to male military members married to civilian wives. Also, only PCS moves where the wife accompanies the member were considered.

This study identified 4 items that can affect family income as a result of a PCS move. First, the family may have moving expenses that are not reimbursed by the government. Second, if the wife works, she must quit her job and suffer a period of unemployment. Third, the wife must seek employment at the new location. Usually, the new job will pay less than the old job due to foregone tenure. Finally, the military member may have a change in part-time income if he works during his off-duty time.

Unreimbursed moving expenses were calculated from data obtained by the Air Force Manpower and Personnel Center in the 1987 PCS Cost Survey. The other components of family income were calculated using data from the 1985 DOD Survey of Officer and Enlisted Personnel and the 1985 DOD Survey of

Military Spouses. When possible, equations were derived to predict the probability of working and the income earned from a job. Using these figures, expected family income was calculated for each of the 20 years in the career. Then, a yearly income annuity was calculated for the sum of the present value of the yearly incomes.

Each additional PCS move during a 20 year career decreases the yearly family income annuity by approximately \$200. Increasing the frequency of PCS moves has a greater income impact on officer families than enlisted families.

THE EFFECT ON FAMILY INCOME OF
VARYING THE FREQUENCY OF PERMANENT
CHANGE OF STATION MOVES

I. Introduction

General Issue

A career in the military is different from a civilian career. Some of the unique characteristics of a military career are frequent permanent change of station (PCS) moves; prolonged periods of family separation due to deployments, sea duty, and remote assignments; and tours of duty outside the United States.

The Department of Defense (DOD) is concerned with the retention and recruitment of qualified individuals to maintain an effective all-volunteer force. An individual's decision to pursue a career in the military (typically 20 or more years) is influenced by family considerations to some degree. Nearly 60 percent of the enlisted force is married and about 75 percent of all officers are married (13:55,58). Since such a large percentage of military members are married, the DOD must be aware of how its policies impact the quality of life of military families.

Due to budget constraints, the DOD has implemented various cost reduction measures. One method of cost reduction implemented by the DOD is reducing the number of

PCS moves by keeping people at one location for longer periods of time. In this study, a PCS move is defined as a non-local move of the entire family. Decreasing the frequency of PCS moves will impact the quality of life for the military family.

Specific Problem

One measure of family well-being is total family income. A PCS move can impact family income in these four areas: First, the family may have moving expenses that are not reimbursed. Second, if the spouse works, the spouse must quit his or her job and suffer a period of unemployment. Third, the spouse must seek employment at the new location. Usually, the new job will pay less than the old job due to foregone tenure. Finally, the military member may have a change in part-time income if he/she holds an second job on their off-duty time.

This study will attempt to determine the effect that varying the number of PCS moves made by a spouse from 5 to 9 over a 20 year career has on total family income for officer and enlisted personnel of the four branches of military service (Army, Navy, Marines, and the Air Force).¹ Women have different work force participation patterns than men.

¹Military members sometimes move unaccompanied by their spouse. The ratio of military member moves to spouse moves for officers is 1.118 (Air Force), 1.129 (Army), 1.127 (Navy), and 1.125 (Marines). For enlisted personnel, the corresponding numbers are 1.192 (Air Force), 1.292 (Army), 1.232 (Navy), and 1.267 (Marines).

Therefore, this study limits the population to be studied to male military members married to civilian wives since approximately 90 percent of the military force consists of males. The population is limited further to include only people in their first marriage and to those who were not married for more than one year before the start of the military career. The purpose of this limitation is to isolate the impact on family income from the endogenous characteristics of a military career.

Research Questions. The research questions that are investigated are as follows:

1. How important is the effect of PCS moves on total family income?
 - a. What impact does moving have on the probability of the wife working?
 - b. What impact does moving have on the wife's earnings?
 - c. What impact does moving have on the probability of the member working a part-time job and the amount of income derived from that part-time job?
2. How does the impact of PCS moves differentially affect the officer and enlisted families of the different services and if so, why?
3. What is the amount of unreimbursed expenses incurred by the family during a PCS move?

Sources of Information

The primary sources of information are the 1985 DOD Survey of Officer and Enlisted Personnel (also called the 1985 Member Survey) and the 1985 DOD Survey of Military Spouses (also called the 1985 Spouse Survey). These two

surveys were administered by the Defense Manpower Data Center. Nearly 19,000 officers and almost 70,000 enlisted personnel responded to the 1985 Member Survey (13:iii). The 1985 Spouse Survey was sent to the spouses of the military members that received the Member Survey. Over 41,000 spouses responded to this survey (8:iii). The questions asked by these two surveys pertain to personal and military background, family economic status, family composition, family programs and services, civilian labor force experience, and family moving experiences (13:iii).

Additional information came from the 1987 PCS Cost Survey conducted by the Air Force Manpower and Personnel Center. Over 800 Air Force officers and over 1,500 Air Force enlisted personnel responded to this survey. All the respondents made a PCS move in the year preceding the survey. This survey asked questions pertaining to family background, moving costs, and reimbursements associated with the PCS move.

Background

The major cause of variance in total family income for military members of the same grade and service longevity is spousal income. Almost all military wives are under the age of 45, and when contrasted with civilian wives under the age of 45, the military wives' labor force participation rate is almost 15 percentage points lower than the civilian wives' rate (10:31).

Three possible reasons why military wives' labor force participation rate is lower than their civilian counterpart's are as follows: First, military wives are often placed as the head of the household while their husbands are assigned to ships, on deployment, or assigned to locations where the family cannot accompany them (9:60-61). In March 1986, 5.5 percent of all military wives were geographically separated from their husbands (10:31). In the survey, 8 percent of the enlisted force and 5 percent of the officers were separated from their families (8:41-42). Second, military families tend to have more children, thus reducing the likelihood of the military wife participating in the labor force, especially if there are preschool children at home (10:31). Finally, the frequent PCS moves severely impacts job opportunities for the military wife. Employment interruptions caused by PCS moves prevent military wives from obtaining specialized training and tenure with an employer which causes the wife to start over at entry level positions after each move (9:62). With each move, the military wife faces the prospect of looking for employment in unfamiliar locations and possible discrimination by employers who consider military wives as short-term employees (10:33).

Due to high mobility, military wives have less tenure in their current job than their civilian counterparts. For full time workers, 71.0 percent of civilian wives and only 45.2 percent of military wives have been employed in their current

job for more than 50 weeks (5:3). For part-time workers, 34.5 percent of civilian wives versus 21.6 percent of military wives have been employed in their current job for more than 50 weeks (5:3). This lack of tenure results in military wives having smaller wages than civilian wives.

In addition to the labor force participation problems caused by high mobility, military wives also face some of the same labor force participation problems that are encountered by wives in general. Studies show that women tend to have different work participation patterns than men -- they generally have more career interruptions "to accommodate family and child-rearing duties" (3:249). An obstacle facing women in the labor force is lower wages resulting from the intermittent work pattern and from a lack of investment in human capital (4:386). Due to intermittent employment, employers and employees have less incentive to pursue training due to the shorter time span to amortize the training investment (4:386). "Women are a vital part of today's labor force, and work is clearly an important part of their lives" (3: 249). The DOD must be aware of the importance that the wife's employment role plays in the decision making process of the military family.

In addition to investigating the impact of PCS moves on wives' earnings, this study also looks at off-duty part-time income of the military member and out-of-pocket unreimbursed

expenses associated with a PCS move. All of these items contribute to the welfare of the military family.

Plan of this Study

Chapter II contains descriptions of data from the surveys and reviews the applicable literature. Unreimbursed moving expenses are analyzed in Chapter III. Chapter IV discusses the methodology used to analyze the data to determine the impact that PCS moves has on military family income. Chapter V analyzes the data and compares family income annuities for different PCS rates for a 20 year career. Finally, Chapter VI contains conclusions and recommendations.

II. Data Description

Introduction

This chapter describes the background data of interest to this study and briefly reviews some of the applicable literature. The first section discusses the expected number of moves made by military families during a 20 year career. The second section shows the proportion of military wives working. The third section describes the income contribution of military wives. The fourth section discusses how mobility and career interruptions affect women's wages. The final two section discuss military income and income earned from off-duty employment.

Mobility of Military Families

One distinguishing characteristic of military families from civilian families is that military families are more mobile. From the 1985 Spouse Survey, 32.12 percent of the families made a PCS move the previous year. In 1984, only 18.6 percent of the entire employed civilian work force moved, either within or outside the local area (1:3).

Figure 1 shows the percentage distribution of the number of family moves made by officer and enlisted personnel who served between 19 and 20 years. Limiting the sample in this manner makes it possible to show the number of family moves for a typical 20 year career in the military. Nearly 32 percent of the officer families, but only 4.6 percent of the

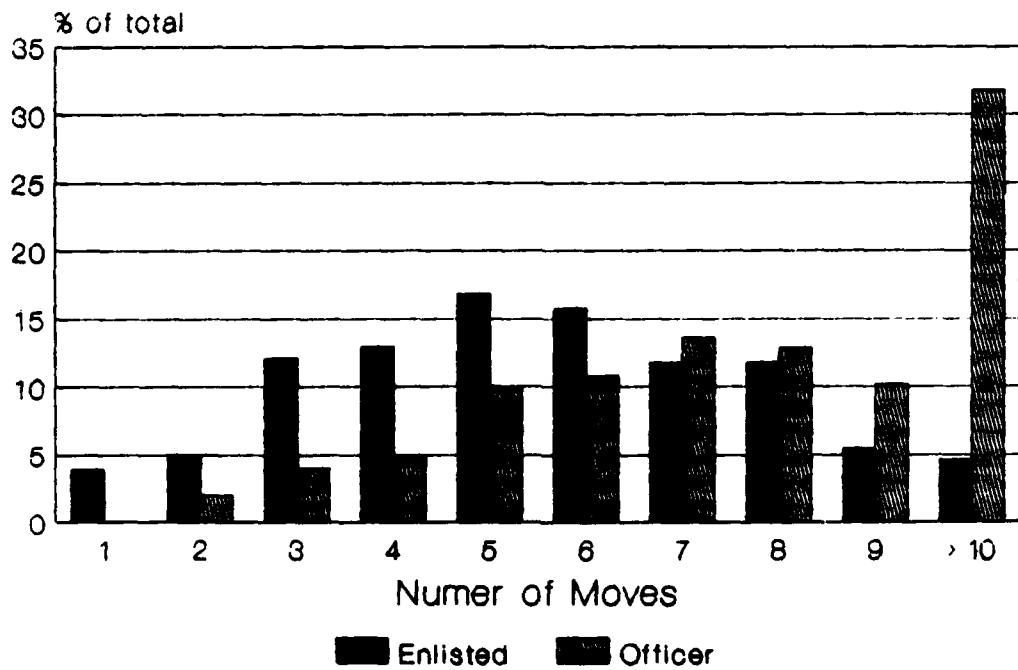


Figure 1. Number of Wife Moves for a 20 Year Career

enlisted families moved more than 10 times in the member's career. Over a 20 year career, officers make more PCS move than enlisted personnel. Army families move more often than the families in the other three services.

Proportion of Wives Working

The high mobility factor associated with the military may partially explain why military wives are less likely to work than their civilian counterparts of the same age (10:31). From the survey, 47.9 percent of the military wives were employed and 9.3 percent considered themselves unemployed.

Table 1 shows the percent of military wives working (part-time or full time), calculated from the spouse survey.

Table 1
Percentage of Wives Working

Years of Service	Army	Air Force	Navy	Marines	All Services
Enlisted < 4	36.72	48.30	46.41	42.17	43.58
Wives 4-8	40.34	50.08	46.62	42.06	44.39
8-12	44.05	49.47	48.65	47.54	47.21
12-16	48.67	54.24	51.26	50.39	51.18
16-20	54.45	55.22	57.11	58.09	56.04
> 20	46.04	58.77	56.57	57.52	55.10
All Enlisted Wives	44.34	51.97	49.88	47.54	
Officer < 4	50.79	48.79	51.17	51.14	50.28
Wives 4-8	45.24	40.00	45.92	42.11	42.97
8-12	40.57	41.44	40.86	39.85	40.75
12-16	46.51	44.49	44.69	50.00	46.26
16-20	52.96	49.62	54.32	49.46	51.39
> 20	46.50	48.95	43.93	57.14	48.40
All Officer Wives	46.90	45.33	46.64	47.63	
All Wives	46.08	49.87	49.08	47.56	47.90

The percentage of wives working ranges from 52 percent for Air Force enlisted wives to 44 percent for Army enlisted wives. Using the T-test for difference of means at the 95 percent level of confidence, wives of Navy and Air Force members are more likely to work when compared to the wives of the other three services taken as a group. Also, Army wives are less likely to work than the wives of the other services taken as a group.

Overall, wives are less likely to work earlier in their husband's career. This is probably due to women opting to stay at home to take care of young children.

Table 2 shows the percentage of working wives that work full time for each service and whether the husband is an officer or enlisted member. Overall, military wives are almost twice as likely to work full time as part-time.

Wife's Income

Wives make a significant contribution to total military family income. For the average enlisted family, the wife accounts for 36 percent of total family income when children are not present and 26 percent when children are present (13:162). For the average officer family, the wife accounts for 31 percent of income for families without children and 15 percent for families with children.

Table 3 shows the average annual income for wives that work full time. The average full time wage income is \$8,368 for enlisted wives and \$12,006 for officer wives. Officers

Table 2
Percentage of Working Wives that Work Full Time

Years of Service		Army	Air Force	Navy	Marines	All Services
Enlisted	< 4	22.51	31.24	29.53	28.55	28.02
Wives	4-8	27.81	33.81	29.92	29.06	30.10
	8-12	29.66	31.03	33.76	32.40	31.61
	12-16	33.16	36.38	34.87	37.04	36.34
	16-20	39.09	34.99	42.27	40.36	38.67
	> 20	34.36	38.15	39.23	42.48	38.50
All Enlisted Wives		30.34	33.90	34.07	33.21	
Officer		32.18	26.57	36.72	34.09	31.65
Wives	4-8	29.70	23.68	29.30	27.37	27.13
	8-12	24.57	24.96	21.59	23.23	23.92
	12-16	27.02	21.15	24.25	29.22	25.02
	16-20	32.49	27.37	29.32	28.57	29.48
	> 20	30.60	28.67	24.86	34.64	29.36
All Officer Wives		29.20	26.15	27.35	28.95	
All Wives		30.01	31.12	32.41	32.18	31.36

Table 3
Average Income for Wives Working Full Time

Years of Service		Air Force	Navy	Marines	All Services
		Army			
Enlisted	< 4	5390.00	5231.00	7009.00	6051.00
Wives	4-8	5553.00	5599.00	7465.00	6666.00
	8-12	6931.00	7127.00	9538.00	8569.00
	12-16	8490.00	7988.00	10469.00	9844.00
	16-20	10219.00	10934.00	12603.00	11041.00
	> 20	10956.00	10626.00	12067.00	12605.00
All Enlisted Wives		7571.00	7624.00	9737.00	8709.00
					8368.00
Officer	< 4	8900.00	11558.00	13801.00	9947.00
Wives	4-8	10247.00	8900.00	12873.00	12068.00
	8-12	8878.00	10117.00	12615.00	12299.00
	12-16	11636.00	10496.00	12802.00	12553.00
	16-20	12159.00	12978.00	15314.00	12332.00
	> 20	15445.00	14466.00	13923.00	14191.00
All Officer Wives		11334.00	11467.00	13598.00	12273.00
					12006.00
All Wives		8621.00	8610.00	10541.00	9480.00
					9247.00

tend to marry older women with more education than the wives of enlisted personnel. Hence, the higher income for officer wives reflects the fact that they have more education and accumulated work experience than enlisted wives. There is a general trend of increasing annual wife's income as the years of service of the military member increases. This is expected since the wife gains work experience over time; therefore, she is more likely to hold a higher paying job. The full time income of Navy wives (both officer and enlisted) is significantly greater than their counterparts in the other services. Navy personnel tend to be assigned near metropolitan areas along both coasts of the United States. Therefore, Navy wives have access to the nominally higher paying jobs associated with metropolitan areas. In addition, Navy wives have higher paying jobs because they have more tenure as a result of moving less frequently.

Table 4 shows the average annual income for wives that work part-time. Enlisted wives' average part-time income is \$4,584, compared to \$5,170 for officer wives. The difference in enlisted and officer wives' part-time income is not as great as the difference in full time income because other factors such as number of hours worked influence total income in addition to education work experience.

Effect of Work Interruptions on Wife's Wages

A PCS move forces a working military wife to interrupt her career for at least the amount of time it takes her to

Table 4
Average Income for Wives Working Part-time

Years of Service		Army	Air Force	Navy	Marines	All Services
Enlisted Wives	< 4	3374.00	3196.00	3208.00	2781.00	3166.00
	4-8	2907.00	3886.00	3534.00	3389.00	3466.00
	8-12	4798.00	4096.00	4701.00	4420.00	4493.00
	12-16	4443.00	5227.00	5227.00	4293.00	4840.00
	16-20	4792.00	5740.00	5849.00	8248.00	6105.00
	> 20	5940.00	6911.00	7066.00	7796.00	6967.00
All Enlisted Wives		4182.00	4677.00	4703.00	4733.00	4584.00
Officer Wives	< 4	4392.00	5853.00	5098.00	3862.00	4965.92
	4-8	4253.00	4736.00	7502.00	4463.00	6177.00
	8-12	4532.00	3619.00	5000.00	4316.00	4240.00
	12-16	5958.00	4334.00	4763.00	6637.00	5292.00
	16-20	5970.00	4533.00	6909.00	5151.00	5545.00
	> 20	4878.00	5717.00	5469.00	6114.00	5568.00
All Officer Wives		5186.00	4709.00	5864.00	5259.00	5170.00
All Wives		4518.00	4688.00	5027.00	4879.00	4764.00

find work at the new location. Mincer and Ofek studied the wage effect of interrupted work careers for married women aged 30 to 44 using panel data from the National Longitudinal Survey. Their findings reaffirm the premise of human capital theory that career interruptions erode accumulated work experience (human capital) and results in lower wages upon re-entry into the labor force. They found that the loss of human capital due to a move induced work interruption is greater than the loss of human capital from other interruptions, such as having or raising a children (14:11). Mincer and Ofek's estimate of the short-run effect of labor force non-participation is the reduction in wages (at the time of re-entry) of between 3.3 percent and 7.6 percent per year of absence from the labor force (14:11). However, these figures include the effect of forgone tenure. They also found that the amount of wages lost due to non-participation is less in the long-run. Eventually, the wage profile of returnees become identical to continuous workers although there appears to be a long-run depreciation effect on wages of between 1.5 percent and 2 percent per year of labor force absence which reflects the loss of tenure as well as the loss of general human capital (14:11).

Military Income

For nearly all military families, the income received from military compensation is the most important source contributing to total family income. On average, military

income accounts for 72 percent of enlisted family income and for 77 percent of officer family income (13:162-163).

Military income can be broken down into three categories -- basic pay, taxable special pays, and non-taxable allowances. Every military member receives basic pay which is taxable and accounts for approximately 75 percent of total military compensation. Basic pay is standardized, and the amount is based on the rank of the member and the number of years in the service. Taxable special pays include career specific incentive bonuses (such as medical pay for doctors) and job related special pay (such as flight pay, sea duty pay, and hazardous duty pay). Non-taxable allowances are intended to offset the cost of housing and meals. Every member either receives these allowances or housing and meals provided at government expense. The three main types of non-taxable allowances are basic allowance of quarter (BAQ), basic allowance for subsistence (BAS), and variable housing allowance (VHA). The amount of BAQ is determined by the rank of the member and whether he or she has dependents. Officer and enlisted personnel have different BAS rates. VHA is an additional housing allowance paid to members assigned to high cost of living areas to offset their higher housing costs.

Table 5 shows total military compensation for married member of each service. The increasing trend for military income as year of service increases reflects increasing basic pay as rank and longevity increase. Income for Air Force

Table 5
Total Military Income (Married Members)

Years of Service		Army	Air Force	Navy	Marines	All Services
Enlisted	< 4	14,477	14,176	15,555	14,888	14,686
	4-8	18,257	17,814	19,859	19,706	19,027
	8-12	21,204	19,916	22,603	22,483	21,739
	12-16	23,676	22,377	25,178	25,186	24,169
	16-20	25,691	25,289	27,304	26,979	26,252
	> 20	30,413	29,688	30,372	31,238	30,350
All Enlisted		20,083	19,651	22,086	21,701	20,931
Officer		27,698	26,804	30,467	24,675	27,353
	4-8	33,623	33,077	34,895	33,180	33,670
	8-12	36,276	37,643	42,525	38,413	38,379
	12-16	41,829	41,998	44,941	43,629	42,878
	16-20	47,024	45,778	47,488	47,145	46,669
	> 20	53,979	53,304	54,601	53,857	53,841
All Officers		40,224	40,173	42,166	38,831	40,375
All Personnel		30,559	31,052	30,633	28,947	30,385

enlisted personnel is lower than the other services because the Air Force enlisted promotion rate is slower. For instance, it takes approximately three years longer to be promoted to E-6 and E-7 in the Air Force than the other services (2:38). Military income for the Navy tends to be higher because a greater proportion receive special pays, mainly sea duty pay. Also, Navy members receive larger VHA payments because a greater proportion of their members are assigned to high cost of living areas.

Military Members Working Second Jobs

On average, income from a second job by military members account for only 2 percent of total enlisted family income and for 1 percent of total family income of officers (13:162-163). Table 6 shows the percentage of married military personnel working at a second job, broken down by service and officer/enlisted. Enlisted personnel are about twice as likely to work a second job as officers (9.6 percent versus 4.6 percent). Table 7 shows the average annual second job income. There is no discernable pattern to the average second job income. The average second job income is \$3,403 for enlisted personnel and \$5,155 for officers.

Table 6
Percentage of Married Military Members Working Part-time

		Air Force				All Services	
Years of Service		Army		Navy	Marines		
Enlisted	< 4	6.55	9.78	8.33	5.93	8.02	
	4-8	4.40	10.83	8.21	10.99	8.99	
	8-12	6.88	10.33	8.70	9.49	8.94	
	12-16	8.12	11.02	10.28	15.92	11.07	
	16-20	11.40	12.87	12.40	12.50	12.44	
	> 20	9.62	5.43	13.19	8.00	9.12	
All Enlisted		7.04	10.63	9.46	10.71	9.62	
Officer		2.38	2.00	3.54	0.88	2.17	
	4-8	6.75	4.40	3.76	2.86	4.39	
	8-12	2.44	4.95	4.08	3.85	3.92	
	12-16	7.50	6.69	3.33	6.72	6.25	
	16-20	5.88	6.17	7.26	4.62	5.65	
	> 20	1.68	6.70	5.00	3.95	4.70	
All Officers		4.72	5.06	4.43	3.83	4.62	
All Personnel		5.90	8.00	7.47	7.88	7.38	

Table 7
Average Off-duty Income

Years of Service		Army	Air Force	Navy	Marines	All Services
Enlisted	< 4	3301.00	1654.00	1358.00	3862.00	2201.00
	4-8	1922.00	2459.00	2129.00	2893.00	2453.00
	8-12	4701.00	2348.00	3896.00	3377.00	3408.00
	12-16	7234.00	2710.00	3445.00	3376.00	3879.00
	16-20	7243.00	4869.00	7585.00	2473.00	6319.00
	> 20	5630.00	3208.00	3316.00	1600.00	3476.00
All Enlisted		5099.00	2855.00	3493.00	3072.00	3403.00
Officer	< 4	5066.00	7838.00	2700.00	807.00	4846.00
	4-8	7832.00	6924.00	3464.00	667.00	5585.00
	8-12	10020.00	2274.00	2825.00	1717.00	3522.00
	12-16	6939.00	4013.00	2459.00	3591.00	4686.00
	16-20	6729.00	4767.00	4308.00	1608.00	4767.00
	> 20	5200.00	7412.00	17530.00	867.00	8565.00
All Officers		7223.00	5049.00	5271.00	1967.00	5155.00
All Personnel		5936.00	3511.00	3912.00	2851.00	3893.00

III. Unreimbursed Moving Expenses

Introduction

Almost every time a military family moves, the family will most likely incur moving expenses that will not be reimbursed by the government. If these out-of-pocket expenses are significant, the financial burden of these expenses may be the deciding factor whether the member will continue his/her career in the military.

In 1987, the Air Force Manpower and Personnel Center surveyed Air Force personnel who moved the previous year. Giuliano, Lyons, and Troyanowski analyzed the data from this survey to determine the average unreimbursed expense incurred by a family during a PCS move (6). This chapter presents their methodology and results. The sample studied was limited to married respondents. Also, respondents making a move from one overseas location to another overseas location were excluded from this sample because the proportion of people making this type of move is too small to analyze separately. The resulting sample had just over 500 officer and just over 700 enlisted responses.

The study investigated four categories of moving expenses -- before move, during move, after move, and automobile expenses. Government reimbursements were looked at next. Then the reimbursements were subtracted from the sum the moving expenses, resulting in out-of-pocket unreimbursed moving expenses. The unreimbursed moving

expenses were analyzed separately for three categories of moves -- CONUS to CONUS, CONUS to overseas, and overseas to CONUS. The final section of this chapter investigates the costs associated with buying and selling a house.

Before Move Expenses

The expenses that were included in the before move expense category are as follows:

1. Moving-out expenses (house/apartment cleaning, painting, etc.), excluding preparation of a home to be sold or rented.
2. Deposits lost, excluding deposits withheld for damages.
3. Cost of temporary lodging and meals from the date of packing household goods till the date of departure.
4. Mobile home preparation.
5. Pet care from the date of packing household goods to the date of departure.
6. Child care for this same period.
7. Cost of shipping household goods not shipped by the government.
8. Additional household goods insurance.
9. Car rental cost from the date of packing household goods to the date of departure.
10. Special items purchased due to conditions at the new location (voltage converters, hot/cold weather clothing, snow tires, etc.).
11. Rental of vehicles or equipment for Do-it-Yourself (DITY) moves.
12. Miscellaneous expenses.

The lodging expense was decreased by the amount of BAQ received by the member for the period of time that the family

spent in temporary quarters before the move. The meal expense was adjusted downward by the amount of BAS received during this same period time. The dollar amounts for the expenses in this category are summarized in the Unreimbursed Moving Expenses section of this chapter.

During Move Expenses

The expenses include in the during move category are as follows:

1. Cost of temporary lodging and meals from the departure day from the old duty station to the arrival day at the new duty station.
2. Toll fees.
3. Cost of gasoline and oil.
4. Transportation costs other than car expenses (bus train, airplane).
5. Car rental fees during the period of travel.
6. Pet travel expenses, excluding food.
7. Out-of-pocket mobile home transportation costs.
8. Miscellaneous expenses.

The survey did not ask the question of how many days were spent traveling from the old duty station to the new duty station. The Joint Travel Regulation allows one travel day per 350 miles for surface travel by private automobile. Assuming, the average PCS move covered one half the distance from the east coast to the west coast, the average number of travel days would be four. Using the assumption of four

travel days, the lodging and meal expenses were adjusted by four days of BAQ and BAS respectively.

After Move Expenses

The following are the expenses included in the after move category:

1. Cost of temporary lodging and meals from the date of arrival at the new duty station until the household goods delivery date.
2. Cost of vicinity travel at the new duty station to locate a new residence.
3. Moving-in expenses (curtains, paint, utility hook-up, etc.), excluding security deposits.
4. Cost of repairing or replacing damaged or lost household goods.
5. Mobile home set-up cost.
6. Pet care from arrival until delivery of household goods, excluding food.
7. Child care expenses from arrival until delivery of household goods.
8. Miscellaneous expenses.

The lodging and meal expenses were adjusted by the amount of BAQ and BAS paid to the member for the period of time that the family spent in temporary quarters after arrival at the new duty station.

Automobile Expenses

The following items constituted automobile expenses if the member moved to or from an overseas location:

1. Maintenance cost to make the automobile road-worthy for the trip.

2. Cost of special handling devices (tow bar, trailer hitch, etc.). Includes preparation cost for overseas operation, such as exhaust system modification.
3. Cost to deliver the car to the departure port.
4. Cost to pick the car up at the arrival port.
5. Cost of automobile storage if storing an automobile.

If the move was within the CONUS, only the cost of making the car road-worthy and the cost of special handling devices were included in the automobile expense category.

Reimbursements

Reimbursements by the government include the following:

1. Member travel allowance.
2. Dependent travel allowance.
3. Dislocation allowance.
4. Funds received from a DITY move.
5. Mobile home allowance.
6. Claims received from damaged or lost household goods.
7. Temporary lodging expense allowance.

Unreimbursed Moving Expenses

Out-of-pocket unreimbursed moving expenses were calculated by summing the costs for the before move, the during move, the after move, and the automobile expense categories, then subtracting government reimbursements. Table 8 shows the average moving costs and reimbursements for officer families and table 9 shows the moving costs for enlisted families. These tables are broken down into three

categories of moves -- CONUS to CONUS, CONUS to overseas, and overseas to CONUS.

Table 8
Moving Expenses and Reimbursements
for Officer Families (\$)

Move Type				
Expense	-----	CONUS-CONUS	CONUS-Overseas	Overseas-CONUS
Category	-----	-----	-----	-----
Before Move		883.11	1106.05	1084.59
During Move		566.70	951.50	832.78
After Move		1627.21	1742.47	1891.09
<u>Automobile</u>		<u>187.49</u>	<u>431.00</u>	<u>438.81</u>
Sub-Total		3264.51	4231.02	4247.27
<u>Less Reimb</u>		<u>1423.53</u>	<u>1487.61</u>	<u>1436.27</u>
Out-of-Pocket		1840.98	2743.41	2811.00

Table 9
Moving Expenses and Reimbursements
for Enlisted Families (\$)

Move Type				
Expense	-----	CONUS-CONUS	CONUS-Overseas	Overseas-CONUS
Category	-----	-----	-----	-----
Before Move		785.00	912.27	1052.70
During Move		474.37	616.98	874.63
After Move		979.15	1159.46	1524.92
<u>Automobile</u>		<u>143.72</u>	<u>291.16</u>	<u>323.34</u>
Sub-Total		2382.24	2979.87	3775.59
<u>Less Reimb</u>		<u>1219.47</u>	<u>1034.10</u>	<u>1360.22</u>
Out-of-Pocket		1162.77	1945.77	2415.37

For both officer and enlisted families, the after move expense category was consistently the largest category contributing to total moving expenses. As expected, moving to or from overseas locations incur greater moving costs than moving within the United States. Government reimbursements do not vary much for the different types of moves. For

officer families, the average unreimbursed moving expenses are \$1,841 for CONUS to CONUS moves, \$2,743 for Conus to overseas moves, and \$2,811 for overseas to CONUS moves. For enlisted families, the average unreimbursed moving expenses are \$1,163 of CONUS to CONUS moves, \$1,946 for CONUS to overseas moves, and \$2,415 for overseas to CONUS moves.

Cost of Buying and Selling a House

The costs associated with buying and selling a house were not included in the unreimbursed expense calculation because it was impossible to separate the investment aspects of a home purchase or sale from other considerations. However, it is interesting to look at the peripheral costs incurred when buying or selling a house.

Nine percent of the respondents sold a house at their old duty station. Selling costs (realtor fees, closing costs, and market preparation) paid by the member averaged \$3,700. On average, the selling price of the houses sold was \$8,200 greater than the purchase price.

Twenty percent of the respondents purchased houses at their new duty station. Closing costs averaged \$2,800 and there was an average required down payment of \$5,600.

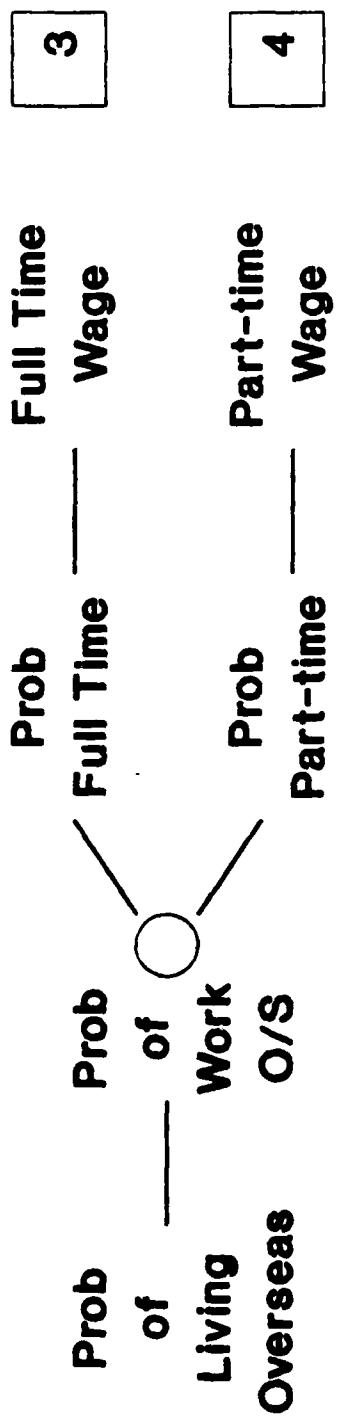
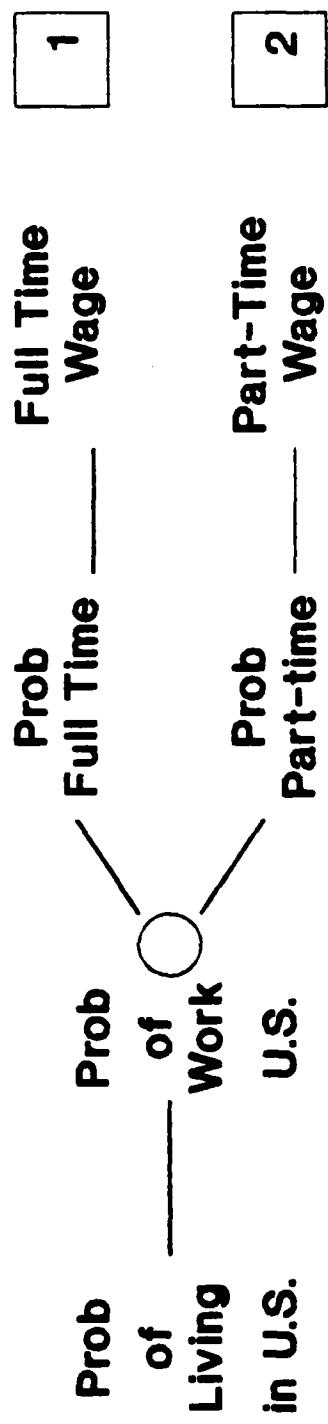
IV. Methodology

Introduction

The four components of total family income considered by this study are income earned by the wife, the member's off-duty part-time job income, unreimbursed moving expenses, and the member's military income. To answer the question of how various PCS rates affect total family income, this study compares the annuity value of the present value of the yearly family income over a 20 year military career. The number of PCS moves made by the wife are varied from 5 to 9 during a 20 year career. The annuity comparison is accomplished for officer and enlisted personnel for each of the four branches of service.

This chapter presents the methodology and the equations used to calculate each component of total family income. The methodology and the probability equations discussed in this were derived from a working paper by Giuliano, Lyons, and Troyanowski (7).² Figures 2 and 3 diagram the method used to

²These authors have studied various aspects of military mobility as it affects the income of various groups. See Lyons' thesis, The Impact of Permanent Change of Station Moves on the Family Incomes of Rated and Nonrated Air Force Officers, and Giuliano's thesis, The Impact of Permanent Change of Station Moves on Air Force Enlisted Family Income for Avionics and Non-Avionics Personnel. Their joint working paper developed estimating equations and other results which were applicable to each author's separate research.



Expected Value of Wife's Income = 1 + 2 + 3 + 4

Figure 2. Expected Value: Wife's Income for a Given Year

Prob of Living in U.S.	Prob of Work U.S.	Part-Time Wage
		<input type="text" value="5"/>

Prob of Living Overseas	Prob of Work Overseas	Part-time Wage
		<input type="text" value="6"/>

Expected Value of Member's Second Job Income = 5 + 6

Figure 3. Expected Value: Member's Second Job Income for a Given Year

calculate the expected value of the wife's income and the expected value of the member's second job part-time income. These two diagrams have a total of 6 branches showing the different calculations that were made to arrive at the various expected income values. Each branch of these figures and each component of the branches are discussed in detail in this chapter.

Family income was calculated for each of the 20 years in the career. In order to accomplish this task, the points in time that the family would move under the different scenarios must be known, which is the topic of the first section of this chapter.

Timing of PCS Moves

One unique feature of a military career is the high frequency of PCS moves. In this study, the number of family PCS moves is varied from 5 to 9 in order to determine the effect that moving has on family income. This study assumes equal spacing of moves throughout the 20 year career. For instance, if the family moves 5 times in 20 years, each move would occur after 48 months of time on station. The number of months on station before a move occurs for the other PCS rates considered are 40 months for 6 moves, 34 months for 7 moves, 30 months for 8 moves, and 27 months for 9 moves. Table 10 is a matrix showing when each move would occur during the 20 year career for each PCS rate. A dash (-) means that there was not a PCS move during that particular

Table 10
Move Points in the 20 Year Career

Year	Number of Moves				
	5	6	7	8	9
1	0/12	0/12	0/12	0/12	0/12
2	-	-	-	-	-
3	-	-	10/2	6/6	3/9
4	-	4/8	-	-	-
5	0/12	-	-	-	5/7
6	-	-	9/3	0/12	-
7	-	8/4	-	-	8/4
8	-	-	-	6/6	-
9	0/12	-	7/5	-	11/1
10	-	-	-	-	-
11	-	0/12	-	0/12	-
12	-	-	5/7	-	1/11
13	0/12	-	-	6/6	-
14	-	4/8	-	-	4/8
15	-	-	4/8	-	-
16	-	-	-	0/12	7/5
17	0/12	8/4	-	-	-
18	-	-	2/10	6/6	9/3
19	-	-	-	-	-
20	-	-	-	-	-

year. A PCS move occurs in the year where a set of numbers appears in an element under the number of moves column. The first number in the element is the number of months spent at the old duty station before the PCS move occurred. The second number in the number of months at the new duty station during that year. Since the move points are now known, the methods and equations used to calculate the expected income values are discussed next.

Wife's Income

The first component of family income is income earned by the wife. The wife's work force participation rate and the amount of income earned are dependent on whether the wife

is located in the CONUS or overseas. Therefore, wife's income was calculated separately depending on whether the wife was overseas. Branches 1 and 2 of Figure 2 show the components of the wife's expected income when she lives in the United States. Branches 3 and 4 show the components of the wife's expected income when she lives overseas. The wife's expected income when living stateside is considered first.

Wife's Income - CONUS. Branches 1 and 2 of Figure 2 depict the components used to calculate the expected value of the wife's earnings when living in the United States. The specific equation to calculate this expected value is as follows:

Expected Wife's Income (CONUS) = Probability of Living in US * Probability of Working (CONUS) * Probability of Working Full Time * Full Time Income + Probability of Living in US * Probability of Working * Probability of Working Part-time * Part-time Income

Each component of this equation is explained in detail in the following sub-sections.

Probability of Living and Working in the CONUS.

The first element in branches 1 and 2 is the probability of the wife living in the United States. In calculating the expected value of the wife's income, the probability of living in the United States was set to be equal to the actual percentage of wives living stateside.

The second component in the CONUS expected wife's earnings equation is the probability of working. A

dichotomous variable was used to indicate whether the wife works. Equations with a dichotomous dependent variable (zero or one) have problems with heteroscedasticity (unequal variance of the residuals) and the residuals are not normally distributed. One solution to overcome these problems is to transform the equation so the error terms follow the logistic distribution and then estimate the equation using the maximum likelihood method (12:16).

The maximum likelihood method was used to derive an equation predicting whether the wife works when stationed stateside. The resulting equation is presented in Table 11.

Table 11
Maximum Likelihood Logit Equation
of Wife Working in the US

<u>Variable</u>	Parameter <u>Estimate</u>	Chi- <u>Square</u>	<u>Prob</u>
INTERCEPT	-3.349330	205.14	.0001
SAGE	0.048757	82.22	.0001
SSCHOOL	0.158028	154.99	.0001
OVERSEAS	0.031554	9.39	.0022
SBOONIES	-0.248617	10.21	.0014
BLACK	0.404734	11.29	.0008
SMONTHS	0.015379	163.72	.0001
MTOTDEBT	0.175508	151.85	.0001
LESS15	-0.260527	38.34	.0001
KIDS	-0.151704	12.65	.0004
HUSBAND	-0.378361	14.87	.0001
MILINC	-0.0000034	109.96	.0001
MCIVERNS	0.0000023	3.40	.0654
MNONWAGE	0.00000098	0.03	.8533

The dependent variable is dichotomous, taking on the value of one if the wife is working either full time or part-time. "SAGE" (spouse age) is very significant. "SSCHOOL"

(number of years of school) has the expected positive impact on the probability of working and are very significant.

"OVERSEAS" is the number of months the wife has spent overseas while married to her husband. The race variable "BLACK" indicates that blacks are more likely to work.

"SBOONIES" is a dummy variable which takes on the value of 1 if the spouse rated the distance to population centers from where she lives as poor or very poor. "SMONTHS" (number of months the spouse has been at the present location) has the expected positive impact on whether the wife works.

"MTOTDEBT" is the amount of non-mortgage debt accumulated by the family. The greater the amount of debt, the greater the likelihood of the wife working. "LESS15" (number of children under the age of 15) and "KIDS" (total number of children) have the expected negative impacts on the likelihood of working. "HUSBAND" is a dichotomous variable taking on the value of one if the wife is presently living where her husband is stationed. "MILINC" is the amount of military income received by the member. "MCIVERNS" is the annual income earned by the member if he has an off-duty part-time job. "MNONWAGE" (amount of non-wage income received by the family) is insignificant.

The following equation was used to convert the results from the logit equation into a predicted probability (12:25):

$$P = \frac{\exp(B'X)}{1 + \exp(B'X)}$$

Where P is the probability, $B'X$ is the result of vector multiplication between the transpose of the parameter value vector and the independent variable vector.

The probability of the wife working in the United States was calculated for each of the 20 years in the career for two groups -- enlisted wives and officer wives. The values for the independent variables were determined for each of the 20 years in order to calculate the probabilities. The values for "BLACK" and "HUSBAND" were determined by taking the overall mean of the variable. These two variables were held constant throughout the 20 years. The average age of the wives at the time when the member entered the military became the value of "SAGE" at year 1. The wife's age was increased by one for each succeeding year. "SSCHOOL" was held constant at the average number of years to school attained by the wives of husbands having one year or less in the service. This was done because the amount of education attained by the wife since her marriage was not known. The value for "SMONTHS" (number of months at the present location) was determined by taking the average of the values for this variable at the beginning and at the end of the year. For instance, "SMONTHS" for the second year on station has a beginning value of 13 and an ending value of 24 resulting in average of 18. If a move occurred in the middle of a year, a weighted average was taken for the different values of "SMONTHS" recorded at the two locations for that year. The

remaining variables were varied in accordance with the mean value of that variable for those members that served the corresponding number of years in the service.

Table 12 shows the probability of officer wives working each year during the 20 year career for each of the 5 PCS rates. As the number of PCS moves increases over the 20 year time span, the overall probability officer wives working decreases. At the time a PCS move occurs, the probability of the wife working decreases between 20 and 30 percent. The result of a separate study (the Air Force PCS Survey) show that the average time the wife was out of the work force due to PCS moves was about 3 months.

Table 12
Probability of Wife Working - CONUS
Officer Wives

Year	Number of Moves				
	5	6	7	8	9
1	0.401	0.401	0.401	0.401	0.401
2	0.556	0.556	0.556	0.556	0.556
3	0.583	0.583	0.565	0.526	0.506
4	0.577	0.475	0.447	0.463	0.474
5	0.424	0.454	0.477	0.493	0.446
6	0.442	0.472	0.389	0.397	0.423
7	0.486	0.466	0.407	0.440	0.433
8	0.518	0.396	0.437	0.415	0.396
9	0.370	0.429	0.417	0.392	0.421
10	0.404	0.464	0.378	0.426	0.364
11	0.433	0.346	0.407	0.346	0.392
12	0.495	0.404	0.395	0.404	0.365
13	0.344	0.431	0.368	0.376	0.383
14	0.375	0.365	0.400	0.353	0.350
15	0.447	0.387	0.386	0.424	0.387
16	0.486	0.425	0.380	0.352	0.383
17	0.369	0.438	0.443	0.413	0.387
18	0.428	0.398	0.398	0.417	0.422
19	0.489	0.458	0.435	0.420	0.409
20	0.574	0.543	0.521	0.505	0.494
Average	0.460	0.445	0.430	0.426	0.420

These patterns existing in the probability of officer wives working are also evident in the probability of enlisted wives working. The enlisted wives' probability of working figures are contained in Appendix A. Appendix A also contains tables showing the intermediate calculations to arrive at the probability of working for both officer and enlisted wives.

Probability of Working Full Time - CONUS. The third factor in the expected value of wife's income in the United States is the probability of working full time. The maximum likelihood method using the same variables as the probability of working logit equation was used to derive an equation for the probability of working full time. The sample used included those wives in the United States working either part-time or full time.

Table 13 contains the resulting maximum likelihood equation. The variables "OVERSEAS", "SBOONIES", "HUSBAND", "MCIVERNS", and "MNONWAGE" are all insignificant. The older the wife and the more years of school attained increases the likelihood of her working full time. Blacks are more likely to work full time. The longer the wife has been at a particular location the more likely she is going to work full time. Children, especially children under the age of 15, decrease the likelihood of the wife working full time. The greater the military income earned by a member, the less likely the wife is going to work full time.

Table 13
 Maximum Likelihood Logit Equation
 of Wife Working Full Time in the US

<u>Variable</u>	<u>Parameter Estimate</u>	<u>Chi-Square</u>	<u>Prob</u>
INTERCEPT	-1.181090	13.06	.0003
SAGE	0.039691	24.90	.0001
SSCHOOL	0.050326	8.15	.0043
OVERSEAS	0.008615	0.43	.5100
SBOONIES	-0.007581	0.00	.9482
BLACK	0.369703	5.52	.0188
SMONTHS	0.007424	22.32	.0001
MTOTDEBT	0.143961	49.09	.0001
LESS15	-0.338280	32.43	.0001
KIDS	-0.128266	4.35	.0376
HUSBAND	-0.180887	2.02	.1548
MILINC	-0.000035	52.56	.0001
MCIVERNS	0.000018	1.22	.2692
MNONWAGE	-0.00000022	0.10	.7506

The calculation of the probability of the wife working full time was accomplished in the same manner as calculating the probability of working. The results and intermediate calculations are contained in Appendix B.

Wife's Full Time Income - CONUS. The next element of the expected value equation for the wife's income if stationed in the United States is her full time income.

Using the same data from the 1985 Member and Spouse Surveys, Gill, Maurin and Phillips derived a wage equation for military wives working full time in the United States. Their equation is presented in Table 14.

The dependent variable is the natural logarithm of the wife's weekly wage. "AGE" and "EDUCATION" (measured in number of years of school attended) have positive impacts

Table 14
Equation for Wife's Full Time Weekly Wage

Dependent Variable: Log of Wife's Weekly Wage
Sample Size: 457
Adjusted R-Square: .3308

<u>Variable</u>	<u>Parameter Estimate</u>	<u>t</u>	<u>Prob > t</u>
INTERCEPT	3.90330	26.423	.0001
AGE	0.02581	6.382	.0001
EDUCATION	0.05714	7.586	.0001
TENURE	0.00116	2.299	.0220
EDUC*SKILL	0.01436	6.064	.0001
SOVERSEAS	-0.01021	-1.318	.1882
BOONIES	-0.04960	-1.005	.3154
BLACK	-0.08724	-1.232	.2187
ASIAN	-0.10159	-1.774	.0767
MILLS	0.10001	1.814	.0704
WMOVES	-0.02978	-3.139	.0018

Source (5:11)

upon income and are very significant. "TENURE" measures the number of months employed in the present job. The positive relationship between "TENURE" and income is expected. "EDUC*SKILL" is an interaction variable between years of education and the degree to which the wife's job utilizes her skills as viewed by the respondent. The significant positive coefficient says that the return in the form of wages from investment in education is greater when the job makes use of that education. The variable "SOVERSEAS" measures the number of months the wife has spent overseas. "BOONIES" is a dummy variable which takes on the value of 1 if the respondent thought that the distance to population centers was poor or very poor. Both "SOVERSEAS" and "BOONIES" are insignificant. The race variable "BLACK" is insignificant, but "ASIAN" is

significant at the 10 percent level. Asian wives may experience language and cultural difficulties in securing higher paying jobs. The "MILLS" variable is a correction term for self-selection bias as suggested by Heckman (11:153). This correction accounts for the fact that women who possess greater knowledge, skills, and abilities are more likely to work and have a greater wage than women who do not work. The last variable "WMOVES" is the number of PCS moves made by the wife. The highly significant "WMOVES" coefficient implies that each PCS move decrease the wife's wage by approximately 3 percent (5:12). This impact on the wife's wage from PCS moves plus the impact on wages from the loss of tenure that accompanies a move show that the high mobility of military families has a serious negative impact on the wages of the wife.

This equation was used to calculate the wife's full time annual wage for each year of the 20 year career in the United States for eight groups -- officer and enlisted wives for each of the services. First, the values for the independent variables were determined. The values for "BLACK" and "ASIAN" were held constant throughout the 20 years at their mean value for each of the eight groups. "AGE" and "EDUCATION" were handled the same way as "SAGE" and "SSCHOOL" were handled in the probability of working equation. The number of moves ("WMOVES") started at one for year 1 and was increased by one when a move occurred. If a move occurred in

the middle of a year, a weighted average was taken based on the proportion of the year spent at the old station and the new station. The values for "SKILL", "SOVERSEAS", and "BOONIES" were varied with the mean values of these variables for the sample whose husbands served the corresponding number of years in the service. The value for "EDUC*SKILL" was the product of "SKILL" and "EDUCATION". The "MILLS" variable is omitted when predicting the dependent variable (11:153).

The values for "TENURE" were estimated indirectly. Separate regression equations were derived to estimate tenure for officer wives and enlisted wives. The equations are as follows:

$$\text{OWTENURE} = -6.0551 + 7.3412 * (\text{LT12}) + 0.5337 * (\text{SMONTHS})$$

$$\text{EWTENURE} = -7.6753 + 5.5967 * (\text{LT12}) + 0.5786 * (\text{SMONTHS})$$

Where "OWTENURE" and "EWTENURE" are officer wives' tenure and enlisted wives' tenure respectively. Tenure is measured in months. "LT12" is a dummy variable which has the value of 1 if the couple has been married for less than 1 year. This variable accounts for the wives who have a greater number of tenure months than months of marriage. This may happen if the wife was already living in the local area when she married her husband. "SMONTHS" is the same variable as in the probability equations and was handled in the same manner. "LT12" used the mean values for each of the year groups. The

resulting values from these equations became the input values for "TENURE" in the full time wage equation.

The resulting independent variable values were multiplied by the parameter estimate for the corresponding variable. Then, the sum of these products was taken. This result represents the natural logarithm of the wife's weekly wage. Next, the anti-log was taken. Lastly, the anti-log was multiplied by 52 to arrive at the wife's annual full time income in the United States. This procedure was repeated for each of the 20 years. The full time income results and intermediate calculations are contained in Appendix C.

The expected value of wife's full time annual income (branch 1 of Figure 2) is the product of the probability of living in the United States, the probability of working, the probability of working full time, and the full time income.

Expected Value of Part-time Income - CONUS. The expected value of the wife's part-time income (branch 2 of Figure 2) is the product of the probability of living in the United States, the probability of working, the probability of working part-time, and her part-time income. The probabilities of working and living in the CONUS are the same probabilities presented previously in the full time income section. The probability of working part-time is one minus the probability of working full time. An equation to predict part-time income could not be derived because the number of hours worked at a part-time job was not known.

Instead, the median weekly part-time income of \$106 was used in the expected income equation.

Expected Wife's Income - CONUS. The expected value of the wife's income in the United States is the sum of the expected values for the wife's full time income and part-time income. This completes the discussion of branches 1 and 2 of Figure 2.

Wife's Income - Overseas. The other major classification of wife's earnings is her expected income when stationed overseas. Branches 3 and 4 of Figure 2 depict the components used to calculate the expected value of the wife's earnings when living overseas. The specific equation to calculate this expected value is as follows:

Expected Wife's Income (Overseas) = Probability of Living Overseas * Probability of Working (O/S) * Probability of Working Full Time (O/S) * Full Time Income (O/S) + Probability of Living Overseas * Probability of Working (O/S) * Probability of Working Part-time (O/S) * Part-time Income (O/S)

The probability of living overseas was to be equal to the actual percentage of wives living overseas, which is equal to 1 minus the probability of living in the United States. Each of the other components in this equation is explained in detail in the following sections.

Probability of Working - Overseas. The maximum likelihood method was used to derive an equation predicting whether the wife works when living overseas. This equation contains the same variables as the CONUS probability of

working equation. Table 15 presents the resulting likelihood equation.

Table 15
Maximum Likelihood Logit Equation
of Wife Working Overseas

<u>Variable</u>	Parameter <u>Estimate</u>	Chi- <u>Square</u>	<u>Prob</u>
INTERCEPT	-4.907090	41.21	.0001
SAGE	0.039874	9.76	.0018
SSCHOOL	0.240546	47.24	.0001
OVERSEAS	0.027127	1.65	.1985
SBOONIES	-0.055697	0.06	.8056
BLACK	1.001600	14.54	.0001
SMONTHS	0.019111	17.44	.0001
MTOTDEBT	0.133412	13.48	.0002
LESS15	-0.206083	3.83	.0504
KIDS	-0.145992	2.11	.1466
HUSBAND	0.307544	0.41	.5213
MILINC	-0.000041	21.85	.0001
MCIVERNS	0.000034	0.84	.3582
MNONWAGE	0.000020	1.88	.1708

The signs on the parameter estimates are same as the CONUS equation except for the variables "SBOONIES" and "HUSBAND". However, these two variables are now insignificant. The number of wives living overseas and not co-located with their husbands is very small, which accounts for the insignificance of this variable. Since most working wives work on base when living overseas, the distance to population centers is not a factor influencing whether the wife works. The variables "OVERSEAS", "KIDS", and "MCIVERNS" also became insignificant at the 10 percent level of significance.

The probability of the wife working when stationed overseas was calculated in the same manner as the probability of working in the CONUS. The results are contained in Appendix D.

Probability of Working Full Time - Overseas. Once again, the maximum likelihood method was used to derive an equation estimating the likelihood of the wife working full time when living overseas. Table 16 presents this equation.

When compared to the CONUS equation for the likelihood of working full time, three additional variables become insignificant -- "SAGE", "LESS15", and "KIDS". The significant variables in both equations have the same signs on the parameter estimates.

The results from the probability calculations are contained in Appendix E.

Table 16
Maximum Likelihood Logit Equation
of Wife Working Full Time Overseas

Variable	Parameter Estimate	Chi-Square	Prob
INTERCEPT	-1.979150	2.89	.0892
SAGE	0.019905	1.02	.3123
SSCHOOL	0.154497	9.05	.0026
OVERSEAS	-0.030893	0.94	.3332
SBOONIES	0.064783	0.03	.8519
BLACK	0.638407	3.38	.0659
SMONTHS	0.011756	2.84	.0917
MTOTDEBT	0.135327	6.55	.0105
LESS15	-0.225603	1.91	.1671
KIDS	-0.074205	0.23	.6314
HUSBAND	-0.103391	0.02	.8892
MILINC	-0.000042	8.44	.0037
MCIVERNS	0.000013	1.93	.1651
MNONWAGE	0.000050	2.93	.0869

Full Time Income - Overseas. Attempts to derive a regression equation to predict overseas full time income for the wife failed. Instead, the median overseas weekly full time income of \$256 was used in the expected value equation.

The expected value of the wife's full time annual income (branch 3 of Figure 2) is the product of the probability of living overseas, the probability of working, the probability of working full time, and the full time income.

Expected Part-time Income - Overseas. The expected value of the wife's part-time income when living overseas (branch 4 of Figure 2) is the product of probability of living overseas, the probability of working, the probability of working part-time, and her part-time income. The overseas probability of working part-time is one minus the overseas probability of working full time. The overseas median weekly income of \$123 was used in the wife's expected income equation.

Expected Wife's Income - Overseas. The overseas expected value of the wife's income is the sum on the overseas full time and part-time expected incomes. This concludes the discussion of branches 3 and 4 of Figure 2.

Member's Off-duty Job Income

The second component of military family income is the income earned by the member from a part-time job. The expected income from the member's second job was calculated separately depending on whether the member is stationed

overseas. Branches 5 and 6 of Figure 3 show the components of the expected value of the member's second job income depending on whether he is stationed stateside or overseas. The member's second job income when stationed in the United States is discussed first.

Member's Second Job Expected Income - CONUS. Branch 5 of Figure 3 depicts the components used to calculate the expected value of the member's second job income when stationed stateside. The stateside expected value of the member's second job is equal to the probability of being stationed stateside times the probability of working part-time (CONUS) times his part-time income (CONUS). The probability of being stationed stateside was set to be equal to the actual percentage of the members stationed stateside. The other components of this equation are discussed in the following sub-sections.

Probability of Working Off-duty - CONUS. Separate maximum likelihood equations for officer and enlisted personnel were derived to predict whether the member works during his off-duty time. Table 17 contains the officer and enlisted likelihood equations.

"MMONTHS" (number of months at the current station) is significant in both equations and has the expected positive impact on the probability of working. "BOONIES" is significant in the officer equation, but it is insignificant in the enlisted equation. This indicates that the type of

Table 17
Maximum Likelihood Logit Equation
for Members Working Part-time CONUS

A. Officers

<u>Variable</u>	Parameter <u>Estimate</u>	Chi- <u>Square</u>	Prob
INTERCEPT	-3.058480	3.21	.0731
MMONTHS	0.009920	3.95	.0468
BOONIES	0.360505	2.95	.0860
MNONWAGE	2.3E-05	5.83	.0158
MTOTDEBT	0.094174	5.03	.0250
MILINC	1.9E-05	1.51	.2194
SEPARATE	-0.114341	10.47	.0012
MRANK	-0.079964	0.41	.5195
KIDS	0.154551	4.71	.0301

B. Enlisted Personnel

<u>Variable</u>	Parameter <u>Estimate</u>	Chi- <u>Square</u>	Prob
INTERCEPT	-2.952150	117.64	.0001
MMONTHS	0.006738	6.56	.0104
BOONIES	-0.062742	0.18	.6708
MNONWAGE	-2.7E-07	0.00	.9848
MTOTDEBT	0.174797	23.90	.0001
MILINC	-7.9E-05	9.45	.0021
SEPARATE	-0.017579	1.18	.2764
MRANK	0.145812	3.52	.0607
KIDS	0.130142	7.34	.0067

second jobs that officers work at are located closer to larger cities. Non-wage income is significant for officer, but it is not significant for enlisted personnel. "MTOTDEBT" has the expected positive impact on the probability of working. "MILINC" is significant in the enlisted equation, but it is insignificant in the officer equation. Junior enlisted personnel with a small military income may need the income from a second job to meet living expenses. "SEPARATE"

is the number of months the member was separated from his wife due to temporary duty, deployment, sea duty, etc. during the previous year. This variable is only significant for officers. The rank of the member is only significant for enlisted personnel. The number of children is significant for both groups.

The methodology used to calculate the probability of the member working a second job was the same as the methodology used to calculate the other probabilities. The results are contained in Appendix F.

Part-time Job Income - CONUS. Median incomes were used in the calculation of the member's second job income equation for the CONUS. The CONUS median income is \$1,950 for officers and \$1,700 for enlisted personnel.

These median incomes were multiplied by the probability of working off-duty and the probability of being stationed in the United States to arrive at the expected value of the member's second job income when stationed stateside.

Member's Second Job Expected Income - Overseas. Branch 6 of Figure 3 shows the components used to calculate the expected value of the member's second job income when stationed overseas. The overseas expected value of the member's second job is equal to the probability of being stationed overseas times the probability of working part-time (overseas) times his part-time income (overseas). The probability of being stationed overseas was set equal to the

actual percentage on the members stationed overseas, which is also equal to one minus the probability of being stationed stateside. The other components of this equation are discussed in the following sub-sections.

Probability of Working Off-duty - Overseas. The maximum likelihood method failed to provide usable equations to predict whether the member works at a second job when stationed overseas because of the small sample size. Instead, the difference between the predicted CONUS probability for a particular year and the percent of the members working in the CONUS for the entire sample was used as the marginal difference between the percent working overseas the probability of working overseas for that year. Specifically, the member's probability of working overseas equals the member's predicted probability of working stateside minus the difference in the actual percentages of the member's working CONUS and overseas. For example, assume that the overall percentage of members working part-time in the CONUS is 5 percent and the percent working part-time overseas is 4 percent: if the predicted probability of working in the CONUS for a particular year was 6 percent, then the probability of working overseas for that year would be [6-(5-4)] or 5 percent.

Part-time Job Income - Overseas. Median incomes were used to calculate the expected value of the overseas

off-duty job income. The median overseas part-time income is \$2,700 for officers and \$2,088 for enlisted personnel.

These median income figures were multiplied by the probability of being stationed overseas and the probability of working a second job when stationed overseas to arrive at the overseas expected value of the member's second job income. The sum of the CONUS and overseas expected values of the member's second job income constitutes the member's second job income contribution to total income for the military family.

Unreimbursed Moving Expenses

The third component affecting total family income is the unreimbursed out-of-pocket expenses resulting from a PCS move. The average unreimbursed moving expenses for different types of moves were calculated in Chapter III for Air Force officer and enlisted personnel. Assuming that the members of the other services experience the same type of moving costs and reimbursements, the Air Force unreimbursed moving expenses should be representative for the other services. The Air Force unreimbursed moving expenses were used for the other services in calculating their unreimbursed moving expenses.

The equation to calculate the expected value of out-of-pocket moving expenses is as follows:

$$EV(OOP) = CUMC * XMC + OSUMC * XMOS$$

CUMC is the unreimbursed moving cost for CONUS to CONUS moves. %MC is the percent of the members stationed stateside. It was assumed that the percentage of CONUS to CONUS moves was equal to the percent of the sample currently stationed stateside. OSUMC is the average of the unreimbursed moving costs for CONUS to overseas moves and overseas to CONUS moves. The percentage of these two types of moves should be approximately equal if the number of people stationed overseas remains constant. %MOS is the percent of the sample stationed overseas which is equal to one minus the percent stationed stateside.

This equation was used to calculate the expected value of unreimbursed moving expenses during the years when a PCS move took place. The result was subtracted from the total family income. Unreimbursed moving expenses category was set to zero during the years when a move did not occur.

Value of Military Income

The fourth and final component of total military family income is the military income received by the member. Using Gill's regression equations for officer income and enlisted income (5:15,17), officer and enlisted military income was calculated for each year in the 20 year career using these equations. The present value for each expected yearly income was calculated using a 3 percent discount rate. A 3 percent discount rate was chosen as an estimate of the future rate of

return net of inflation. The present value concept accounts for the time value of money. The present value sum represents the amount of money that is needed today to make the expected military income payments in the 20 year career. Then, an annuity was calculated from the sum of the 20 yearly present value income figures. The annuity restates the present value of the future military income stream in terms of 20 equal annual payments. Appendix G contains the regression equations, the input values for the independent variables, and the predicted military income by year. The resulting annuities are contained in Table 18.

Table 18
Twenty Year Military Annuity

<u>Service</u>	<u>Officer</u>	<u>Enlisted</u>
Air Force	36,617	21,926
Army	35,474	21,848
Navy	37,557	22,906
Marines	35,734	22,061

The annuity value of military income for officers ranges from \$35,557 for the Navy to \$35,474 for the Army. The enlisted military income annuity ranges from \$22,906 for the Navy to \$21,848 for the Army. The expected value of military income is greater for Navy personnel because a greater percentage of Navy personnel receive special pay, mainly sea duty pay.

The next chapter calculates the expected family income by summing the four components of income presented in this chapter.

V. Results

Introduction

This chapter presents the results of calculating the expected total family income for the different number of PCS moves in a 20 year career. The results are presented in the form of an annuity for officer and enlisted personnel for each of the services. After this, the results from two sensitivity analyses are presented. The sensitivity analyses computed total family income if all wives worked full time and if all wives worked part-time.

Total Family Income

In this study, expected total family income is defined as the expected military income plus the expected wife's income plus the member's expected second job income minus unreimbursed moving expenses. Family income was calculated for each year in the 20 year career using this formula. The present value for each expected yearly income was calculated using a 3 percent discount rate. A 3 percent discount rate was chosen as an estimate of the future rate of return net of inflation. The present value concept accounts for the time value of money. The present value sum represents the amount of money that is needed today to make the expected income payments in the 20 year military career. Then, an annuity was calculated from the sum of the 20 yearly present value income figures. The annuity restates the present value of

the future income stream in terms of 20 equal annual payments. Tables listing the expected total family income are contained in Appendix H. The following sub-sections discuss how family income varies as the number of PCS moves in 20 years increases for each of the services.

Air Force Family Income. Figure 4 shows the expected Air Force officer and enlisted family income annuities for the different number of PCS moves (5 through 9) in a 20 year career. Air Force officer expected family income drops from \$40,474 per year with 5 PCS moves to \$39,483 per year with 9 PCS moves. Each additional move made in the 20 year career decreases the expected family income for Air Force officers by an average of \$248 per year.

The expected total annual income for Air Force enlisted families ranges from \$25,553 at 5 PCS moves to \$24,737 at 9 PCS moves. The average annual decrease in family income is \$204 with each increment in the number of PCS moves.

Army Family Income. Figure 5 depicts the expected family income annuity for Navy officer and enlisted families when 5, 6, 7, 8, and 9 PCS moves are made in a career. Expected Army officer income decreases from \$39,311 per year at 5 PCS moves to \$38,309 per year at 9 PCS moves. The average decrease in annual income is \$251 with each additional move in the 20 years.

Army enlisted family income ranges from \$25,517 per year with 5 PCS moves to \$24,661 per year with 9 PCS moves. On

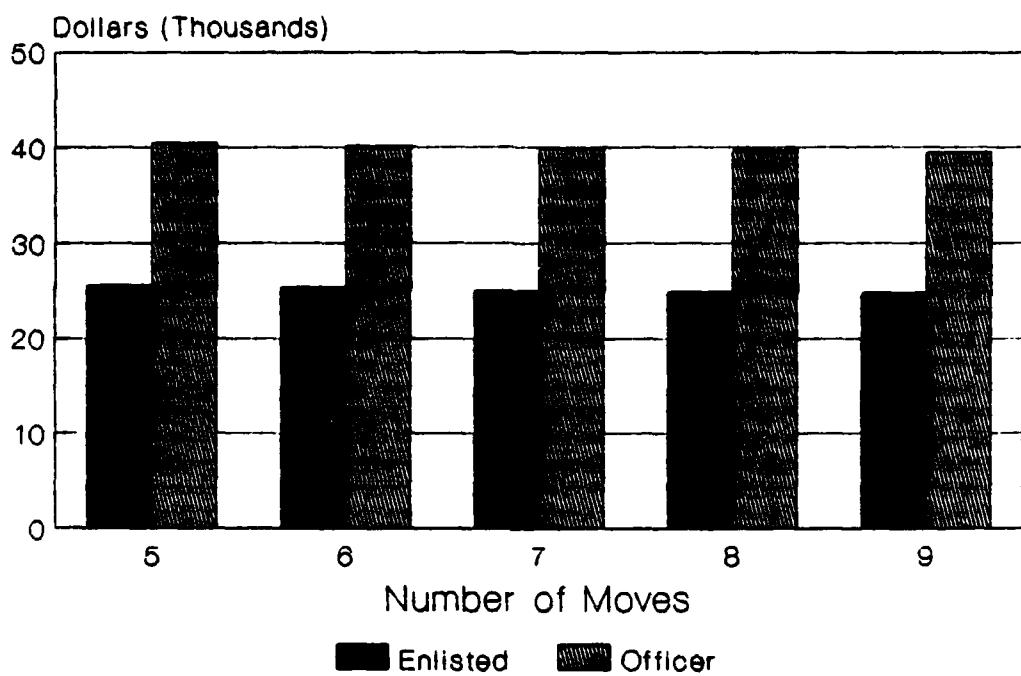


Figure 4. Total Family Income Annuity - Air Force

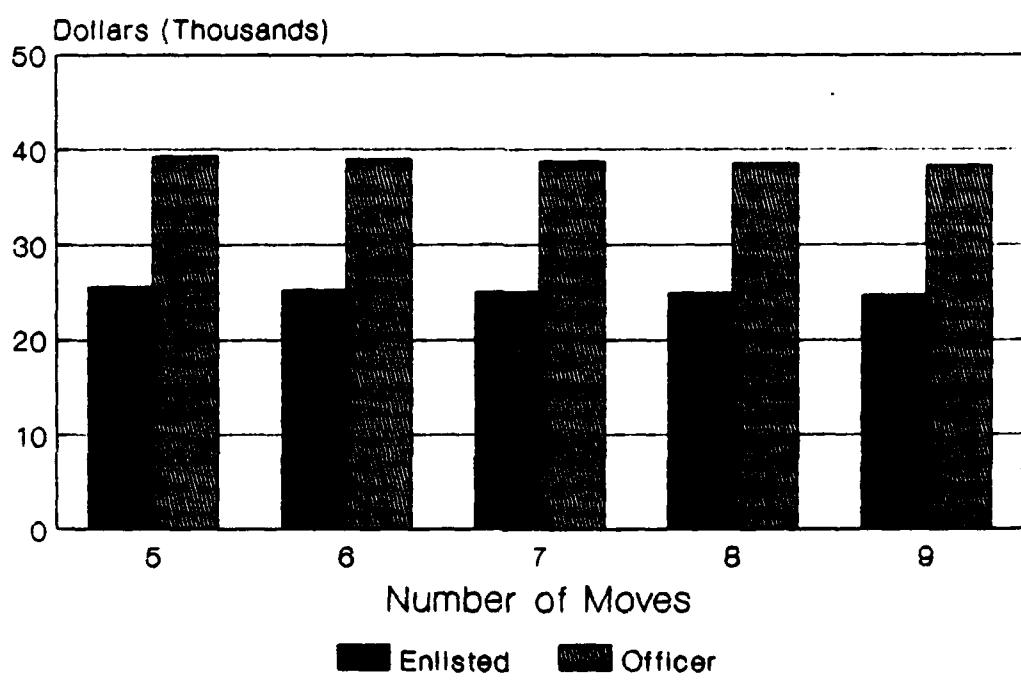


Figure 5. Total Family Income Annuity - Army

average, the Army enlisted family is expected to lose \$214 in annual income with each additional PCS move made within the 20 year career.

Navy Family Income. Figure 6 shows how the expected Navy officer and enlisted family income annuity decreases as the number of PCS moves in a 20 year career increases. The expected annual income for Navy officer families drops from \$41,302 at 5 PCS moves to \$40,341 at 9 PCS moves. The average decrease in Navy officer family annual income is \$240 with each additional PCS move in a 20 year career.

The expected annual income for Navy enlisted families ranges from \$26,656 at 5 PCS moves to \$25,841 at 9 moves. On average, the Navy enlisted family is expected to lose \$204 in annual family income with each additional PCS move in a career.

Marine Family Income. Figure 7 presents how the Marine officer and enlisted family income annuities decrease as the number of PCS moves in a 20 year career increases. Expected Marine officer family income decreases from \$39,463 per year with 5 PCS moves to \$38,516 per year with 9 PCS moves. Each additional PCS move made in a 20 year career decreases the expected Marine officer family income by an average of \$237 per year.

The expected Marine enlisted family income ranges from \$25,623 to \$24,858 per year at 5 and 9 PCS moves in 20 years, respectively. The average decrease in annual family income

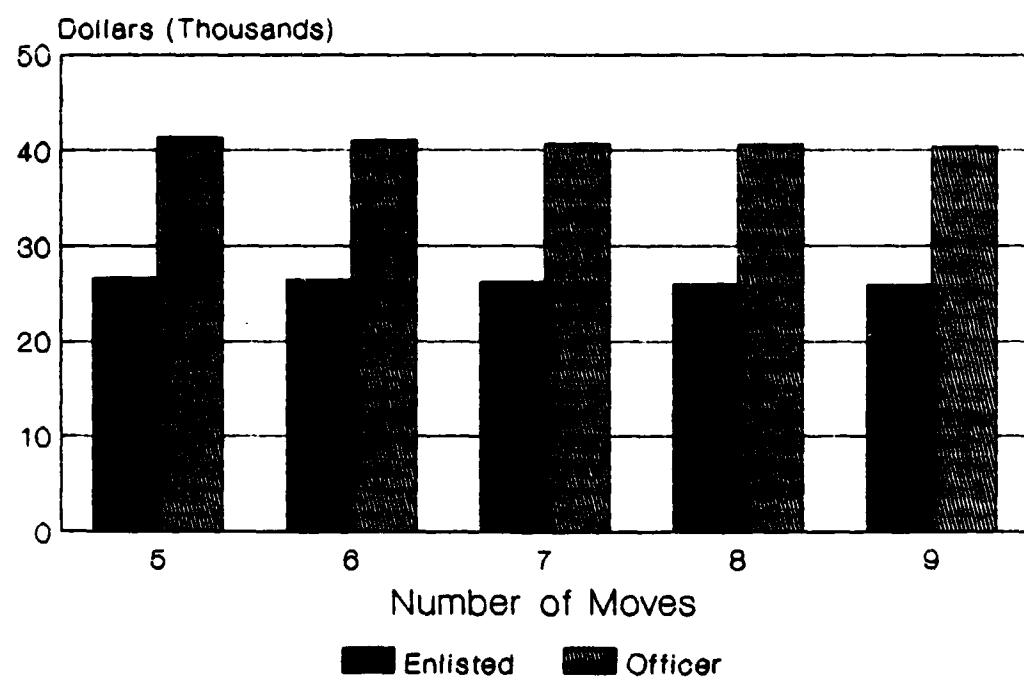


Figure 6. Total Family Income Annuity - Navy

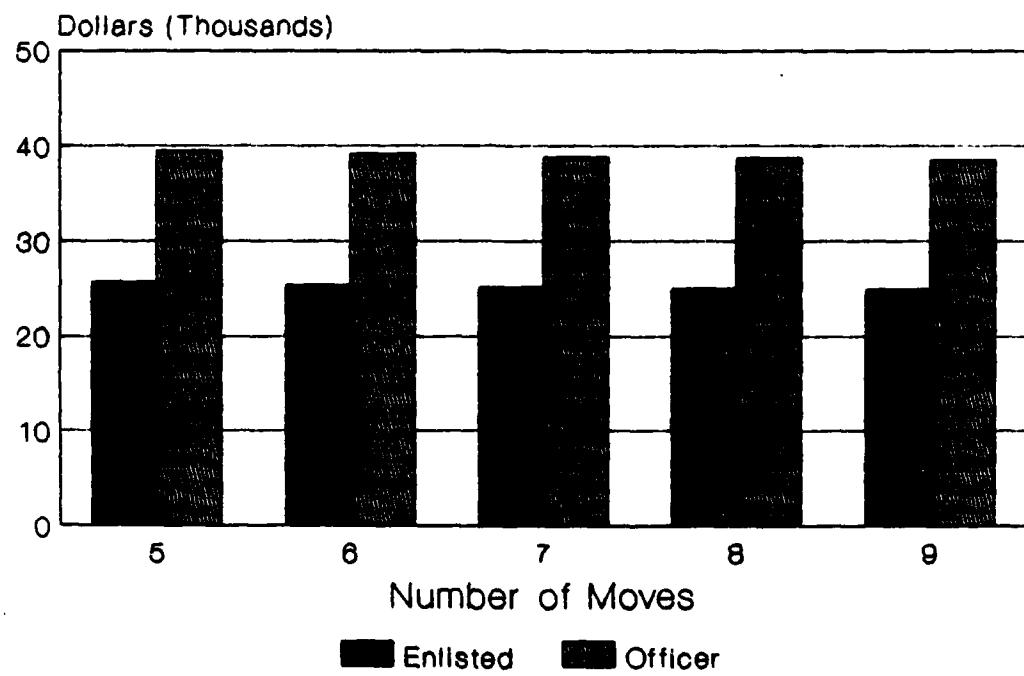


Figure 7. Total Family Income Annuity - Marines

is \$191 with each additional move in the 20 year career for Marine enlisted families.

Comparison of Results. Table 19 summarizes the average decrease in the income annuity as the number of PCS moves in a 20 year career was incremented from 5 to 9. Since military income is not affected by PCS moves, the changes in the annuity values are the result of changes in the other components of family income -- the wife's income, the member's second job income, and unreimbursed moving expenses.

Table 19
Average Decrease in Annual Income Annuity per Move

<u>Service</u>	<u>Officer</u>	<u>Enlisted</u>
Air Force	248	204
Army	251	214
Navy	240	204
Marines	237	191

These changes in family income annuities may seem small for two reasons. First, these annuities measure the average impact of mobility on income for all families. But, only about 50 percent of the spouses work and less than 10 percent of the members work a second job. For families that have these sources of income, the impact of mobility is greater than what is indicated here. Second, taking the present value of future income reduces the impact of future changes in income that occur later in the career. For instance, the undiscounted value of total family income over the 20 year career drops by nearly \$7,000 when the number of moves increases from 5 to 6.

Increasing the frequency of PCS moves has a greater negative impact on the expected income for officer families than for enlisted families. Since officer wives hold jobs that pay a greater salary than enlisted wives, the impact on income from PCS moves through the loss of tenure is greater for officer wives. Officer families also have greater out-of-pocket moving expenses than enlisted families.

Army families (officer and enlisted) incur a larger loss of income than the other services with each increment in the number of PCS moves. A greater percentage of Army wives live overseas than the other services. Since the expected value of the wife's income is less when living overseas, Army families incur this larger decrease in wife's income more frequently than the other services.

The expected number of wife moves in the 20 year career was calculated for officer and enlisted families for each of the services. Then, a family income annuity was determined for each group based on the expected number of moves. Table 20 shows the resulting annuities when the number of PCS moves was set equal to the expected number of moves in a 20 year career. Among officer families, the income annuity is the largest for the Navy, followed by the Air Force, the Marines, and finally the Army. For enlisted families, the order of income annuities is the Navy, the Air Force, the Army, and finally the Marines.

Table 20
Annuities Based on the Expected Number of Wife Moves

	<u>Average Number of PCS moves by Wife in 20 Years</u>	<u>Present Value of Future Family Income in Terms of Annuity</u>
Air Force		
Officer	6.4	40,037
Enlisted	5.4	25,436
Army		
Officer	7.9	38,537
Enlisted	6.8	25,018
Navy		
Officer	6.8	40,764
Enlisted	6.5	26,251
Marines		
Officer	8.7	38,582
Enlisted	8.4	24,953

Sensitivity Analysis

Sensitivity analyses were performed using two different conditions -- all wives working full time and all wives working part-time. The next two sections present the family income annuities for these two scenarios.

All Wives Working Full Time. The probability of the wife working (CONUS and overseas) and the probability of working full time were set to one. The wife's income was decreased by 25 percent in the years that the family made a PCS move. This accounts for the period of time (approximately 3 months) the wife is unemployed due to the move. Table 21 shows the resulting family income annuities under these conditions. The intent is to analyze the effect of PCS moves on family income for families when the wife chooses to work full time.

Table 21
Sensitivity Analysis - Wife Working Full Time
Expected Family Income Annuity

	Number of Moves				
	5	6	7	8	9
Enlisted					
Air Force	31,903	31,549	31,231	30,909	30,585
Army	32,147	31,800	31,470	31,178	30,857
Navy	33,198	32,822	32,460	32,142	31,806
Marines	31,562	31,197	30,859	30,558	30,240
Officer					
Air Force	48,640	48,175	47,720	47,326	46,899
Army	47,385	46,923	46,502	46,109	45,693
Navy	49,110	48,650	48,223	47,836	47,424
Marines	47,225	46,770	46,330	45,939	45,528

The expected annual family income increases by approximately \$7,000 for enlisted families and by nearly \$9,000 for officer families when all wives work full time. Officer wives working full time earn about \$2,000 more per year than enlisted wives working full time. On average, officer family income decreases by about \$275 per year for each increase in the number of moves made in the 20 year career. The average decrease in annual income for enlisted families is about \$210 when the number of PCS moves in 20 years is incremented by one when the wife works full time.

All Wives Working Part-time. The probability of working and the probability of working part-time were set to one. Once again, the wife's income was decreased by 25 percent during the years of a move. The resulting impact on family income annuities is presented in Table 22. The increase in the family income annuity over the base expected income ranges from \$1,300 to \$2,300. Officer family income

decreases by about \$100 per year with each increase in the number of moves. For enlisted families, annual income decreases by approximately \$80 with each additional move in the 20 year period.

Table 22
Sensitivity Analysis - Wife Working Part-time
Expected Family Income Annuity

	Number of Moves				
	5	6	7	8	9
Enlisted					
Air Force	27,017	26,868	26,727	26,590	26,444
Army	27,005	26,847	26,693	26,552	26,397
Navy	27,969	27,827	27,687	27,560	27,421
Marines	27,107	26,969	26,834	26,711	26,575
Officer					
Air Force	41,433	41,254	41,079	40,919	40,743
Army	40,334	40,150	39,971	39,807	39,626
Navy	42,386	42,210	42,038	41,879	41,706
Marines	40,522	40,349	40,180	40,024	39,853

VI. Conclusions and Recommendations

Conclusion

Summary. The purpose of this study was to determine the effect that varying the number of PCS moves from 5 to 9 over a 20 year career has on total family income for officer and enlisted families of the four services. The population studied was limited to male military members married to civilian wives. Also, only PCS moves where the wife accompanies the member were considered.

This study identified 4 items that can affect family income as a result of a PCS move. First, the family may have moving expenses that are not reimbursed by the government. Second, if the wife works, she must quit her job and suffer a period of unemployment. Third, the wife must seek employment at the new location. Usually, the new job will pay less than the old job due to foregone tenure. Finally, the military member may have a change in part-time income if he works during his off-duty time.

Unreimbursed moving expenses were calculated from data obtained by the Air Force Manpower and Personnel Center in the 1987 PCS Cost Survey. The other components of family income were calculated using data from the 1985 DOD Survey of Officer and Enlisted Personnel and the 1985 DOD Survey of Military Spouses. When possible, equations were derived to predict the probability of working and the income earned from a job. Using these figures, expected family income was

calculated for each of the 20 years in the career. Then, a yearly income annuity was calculated for the sum of the present value of the yearly incomes.

Answers to the Research Questions. Specifically, this study attempted to answer six research questions. The first research question asked what impact does moving have on the probability of the wife working. The probability of the wife working increases as the amount of time living in a particular area increases. At the time a PCS move occurs, the probability of the wife working decreases between 20 and 30 percent. Also, the probability of the wife working when living overseas is approximately 3 percentage points lower than the probability of working when living stateside. The drop in the probability of the wife working during the year when a move occurs also accounts for the period of unemployment that the wife suffers due to the move.

The second research question asked what impact does moving have on the wife's earnings. For wives working full time in the CONUS, the annual wage drops between 3 and 4 percent in the year immediately following a move. The annual annuity for officer wives decreases by slightly over \$200 per year for each additional move made in the 20 year career. For enlisted wives, the decrease in the full time income annuity is about \$175 per year for each additional move. Once again, these loss of income figures are cumulative. The

effect of moving on the wife's part-time wages or her wages when living overseas could not be determined.

The third research question asked what impact does moving have on the probability of the member working a part-time job and the amount of income derived from that part-time job. The probability of the member working a second job decreases slightly (approximately 1 percentage point) after a PCS move. But, the overall proportion of members working a second job (about 4 percent for officers and 9 percent for enlisted) is so small that the impact on expected family income is negligible. The necessary information was not available to draw any conclusions on how PCS moves affect the members's second job earnings. The average off-duty income for part-time employed officers is \$5,100 and \$3,400 for enlisted personnel.

The fourth research question asked how important is the effect of PCS moves on total family income. The expected value of officer family income drops by nearly \$250 per year for each additional PCS move made in the 20 year career. This loss of income is cumulative. For instance, the difference in expected officer family income is \$1,000 less for every year in the 20 year career if 9 PCS moves are made in that career rather than 5 PCS moves. For enlisted families, the drop in expected income was slightly greater than \$200 per year for each additional move within the 20 year career.

The fifth research question asked how does the impact of PCS moves differentially affect the officer and enlisted families of the different services. Army families (officer and enlisted) incur a larger loss of income than the other services with each increment in the number of PCS moves. A greater percentage of Army wives live overseas than the other services. Since the expected value of the wife's income is less when living overseas, Army families incur this larger decrease in wife's income more frequently than the other services. Marine families (officer and enlisted) incur the smallest decrease in the income annuity. The marines have the smallest percentage of families living overseas. The decreases in income annuities are approximately equal for Navy and Air Force families.

The last research question asked what is the amount of unreimbursed expenses incurred by the family during a PCS move. Analysis from the Air Force PCS Survey revealed that out-of-pocket moving expenses incurred by officer families total \$1,841 for CONUS to CONUS moves, \$2,743 for CONUS to overseas moves, and \$2,811 for overseas to CONUS moves. The respective unreimbursed moving expenses for enlisted families are \$1,163, \$1,946, and \$2,415.

Areas For Further Research

The Defense Manpower Data Center is planning to administer the Member Survey and the Spouse Survey again in the early 1990's. After the collection is completed, this

study should be performed with the new data from the surveys. Comparison of the results of these two studies would be interesting.

The surveys used in this study did not contain information necessary to estimate part-time wage equations. The additional information needed to estimate part-time wage equations includes the number of hours worked per week and the hourly wage. Also, a history of the wife's labor force participation was not available. If this type of information was available, the amount of time the wife is out of the labor force due to PCS moves could be determined. This would give a better indication of how mobility affects spouse income.

PCS cost surveys similar to the Air Force's could be performed for the other services. It would be interesting to compare unreimbursed PCS costs between the services.

Research could be done to determine the impact of mobility on retention. Research on family income after retirement from the military would be needed to determine lifetime income for military families. Also, the impact of mobility during the military career on the second career income of the spouse and the member could be researched.

**Appendix A: Probability of the Working - CONUS:
Results and Input Values**

**A: Probability of Wife Working - CONUS
Enlisted Wives**

Year	Number of Moves				
	5	6	7	8	9
1	0.343	0.343	0.343	0.343	0.343
2	0.429	0.429	0.429	0.429	0.429
3	0.487	0.487	0.468	0.429	0.410
4	0.521	0.419	0.392	0.407	0.418
5	0.387	0.416	0.439	0.454	0.408
6	0.428	0.459	0.376	0.384	0.410
7	0.463	0.443	0.384	0.418	0.410
8	0.515	0.393	0.434	0.412	0.393
9	0.369	0.428	0.416	0.391	0.419
10	0.410	0.471	0.384	0.433	0.370
11	0.483	0.392	0.456	0.392	0.441
12	0.515	0.423	0.414	0.423	0.383
13	0.379	0.469	0.405	0.413	0.420
14	0.434	0.424	0.460	0.411	0.407
15	0.487	0.426	0.424	0.464	0.426
16	0.536	0.475	0.429	0.399	0.432
17	0.414	0.485	0.490	0.460	0.433
18	0.485	0.455	0.454	0.474	0.480
19	0.543	0.513	0.490	0.474	0.463
20	0.598	0.568	0.546	0.530	0.519
Average	0.461	0.446	0.432	0.427	0.421

B: Values for "SMONTHS" for the Different PCS Rates

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	6.00	6.00	6.00	6.00	6.00
2	18.00	18.00	18.00	18.00	18.00
3	30.00	30.00	25.17	15.00	9.75
4	42.00	15.33	8.00	12.00	15.00
5	6.00	14.00	20.00	24.00	11.83
6	18.00	26.00	3.75	6.00	13.00
7	30.00	24.67	9.00	18.00	16.00
8	42.00	10.00	21.00	15.00	10.00
9	6.00	22.00	18.83	12.00	19.75
10	18.00	34.00	11.00	24.00	7.00
11	30.00	6.00	23.00	6.00	19.00
12	42.00	18.00	15.58	18.00	7.17
13	6.00	30.00	13.00	15.00	17.00
14	18.00	15.33	25.00	12.00	11.00
15	30.00	14.00	13.67	24.00	14.00
16	42.00	26.00	14.00	6.00	14.75
17	6.00	24.67	26.00	18.00	11.00
18	18.00	10.00	9.83	15.00	16.50
19	30.00	22.00	16.00	12.00	9.00
20	42.00	34.00	28.00	24.00	21.00

C: Input Values for Probability Equations
Officer Wives

Year	MNONWAGE	MTOTDEBT	MILINC	SAGE	KIDS	LESS15	MCIVERN	SMOONIES	OVERSEAS
1	1317.90	4.74	20068.08	23	1.20	0.94	64.29	0.10	0.44
2	734.29	4.75	16448.78	24	0.41	0.32	13.13	0.11	0.17
3	666.85	4.89	19184.84	25	0.58	0.45	91.07	0.11	0.29
4	869.89	4.55	22392.04	26	0.82	0.66	210.29	0.11	0.28
5	783.14	4.51	23601.29	27	0.96	0.79	30.50	0.16	0.41
6	1002.24	4.21	25746.55	28	1.16	0.92	448.33	0.09	0.53
7	1078.28	4.43	26288.20	29	1.28	1.11	197.65	0.12	0.74
8	2653.62	4.10	27903.43	30	1.30	1.13	295.29	0.08	0.73
9	1531.22	4.11	28505.43	31	1.49	1.32	205.73	0.10	0.97
10	1661.28	4.17	29569.98	32	1.64	1.47	254.95	0.11	0.91
11	1560.41	4.30	30900.68	33	1.86	1.68	63.41	0.15	1.31
12	1589.89	4.21	31735.21	34	1.76	1.59	19.33	0.07	1.36
13	2053.26	4.13	32653.64	35	1.94	1.78	122.03	0.11	1.59
14	1955.17	4.03	33188.38	36	2.10	1.96	345.96	0.10	1.59
15	2725.75	3.98	34347.89	37	1.84	1.72	296.90	0.08	1.85
16	2664.67	4.23	35434.61	38	2.09	1.90	372.55	0.09	1.88
17	3644.69	4.13	35513.73	39	2.07	1.77	279.50	0.08	2.11
18	2909.20	4.46	37384.12	40	2.16	1.62	97.88	0.09	2.16
19	2922.48	4.19	37923.50	41	2.06	1.50	456.22	0.05	2.53
20	4678.05	4.47	38194.71	42	2.04	1.28	223.85	0.06	3.03

Constant	Values
SSCHOOL	14.988
HUSBAND	0.948
BLACK	0.025

D: Input Values for Probability Equations
Enlisted Wives

Year	MNONWAGE	MTOUDDEBT	MILINC	SAGE	KIDS	LESS15	MCIVERNS	SBONNIES	OVERSEAS
1	1139.61	4.16	11414.55	21	1.08	0.98	426.82	0.11	0.72
2	832.54	3.61	8633.42	22	0.67	0.62	107.25	0.09	0.10
3	414.22	3.77	9344.74	23	0.69	0.62	98.99	0.11	0.24
4	638.43	4.01	10375.63	24	0.92	0.87	163.02	0.14	0.35
5	524.48	4.28	12313.20	25	1.01	0.96	143.38	0.13	0.74
6	787.12	4.24	12746.65	26	1.14	1.08	337.79	0.10	0.77
7	895.61	4.28	13094.89	27	1.32	1.25	163.19	0.15	0.76
8	591.05	4.39	13878.64	28	1.41	1.35	212.79	0.11	1.06
9	904.97	4.34	14269.35	29	1.61	1.53	316.14	0.08	1.02
10	918.44	4.56	15213.61	30	1.73	1.69	176.87	0.11	1.14
11	935.49	4.52	15441.04	31	1.68	1.55	441.05	0.08	1.70
12	816.93	4.66	16668.80	32	1.93	1.84	285.97	0.12	1.88
13	504.35	4.54	16357.50	33	1.96	1.82	223.02	0.12	1.86
14	1251.38	4.63	16796.08	34	2.00	1.94	693.29	0.11	2.31
15	990.73	4.51	17281.26	35	1.99	1.91	314.33	0.09	2.69
16	1261.95	4.80	17546.41	36	2.16	2.04	485.72	0.14	2.45
17	1040.83	4.54	18006.50	37	2.11	1.90	505.08	0.09	3.01
18	997.74	4.61	18622.51	38	2.06	1.72	765.75	0.11	3.25
19	947.58	4.47	18927.18	39	1.96	1.53	641.77	0.20	3.08
20	986.18	4.64	19986.35	40	2.10	1.49	809.76	0.11	2.49

Constant	Values
SSCHOOL	12.531
HUSBAND	0.934
BLACK	0.063

Appendix B. Probability of Working Wives Working Full Time - CONUS: Results and Input Values

A: Probability of Working Full Time Officer Wives - CONUS

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	0.470	0.470	0.470	0.470	0.470
2	0.610	0.610	0.610	0.610	0.610
3	0.607	0.607	0.598	0.580	0.570
4	0.574	0.525	0.511	0.519	0.524
5	0.491	0.506	0.517	0.524	0.502
6	0.475	0.490	0.448	0.453	0.465
7	0.492	0.482	0.453	0.469	0.466
8	0.496	0.437	0.457	0.446	0.437
9	0.413	0.442	0.436	0.424	0.438
10	0.420	0.449	0.408	0.431	0.400
11	0.422	0.379	0.410	0.379	0.402
12	0.455	0.411	0.407	0.411	0.392
13	0.368	0.411	0.380	0.384	0.387
14	0.371	0.366	0.383	0.360	0.359
15	0.418	0.390	0.389	0.408	0.390
16	0.426	0.398	0.376	0.363	0.378
17	0.380	0.413	0.416	0.401	0.389
18	0.417	0.402	0.402	0.411	0.414
19	0.446	0.432	0.421	0.414	0.408
20	0.508	0.494	0.482	0.475	0.469
Average	0.463	0.456	0.449	0.447	0.444

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

B: Probability of Working Wives Working Full Time
 Enlisted Wives - CONUS

Year	Number of Moves				
	5	6	7	8	9
1	0.478	0.478	0.478	0.478	0.478
2	0.558	0.558	0.558	0.558	0.558
3	0.588	0.588	0.580	0.561	0.552
4	0.592	0.543	0.530	0.537	0.542
5	0.519	0.534	0.545	0.552	0.530
6	0.531	0.546	0.504	0.509	0.522
7	0.542	0.532	0.503	0.520	0.516
8	0.560	0.501	0.521	0.510	0.501
9	0.476	0.506	0.500	0.487	0.502
10	0.492	0.521	0.479	0.503	0.471
11	0.534	0.489	0.521	0.489	0.513
12	0.537	0.493	0.489	0.493	0.473
13	0.471	0.516	0.484	0.488	0.492
14	0.491	0.486	0.504	0.479	0.478
15	0.519	0.490	0.489	0.508	0.490
16	0.542	0.512	0.490	0.475	0.492
17	0.486	0.521	0.523	0.509	0.496
18	0.532	0.517	0.517	0.526	0.529
19	0.575	0.560	0.549	0.542	0.537
20	0.600	0.586	0.575	0.568	0.562
Average	0.531	0.524	0.517	0.515	0.512

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

**Appendix C: Wife's Full Time Income - US:
Results and Input Values**

**A: Predicted Wife's Full Time Income - US
Air Force Officer Wives (\$)**

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	11,126	11,126	11,126	11,126	11,126
2	11,688	11,688	11,688	11,688	11,688
3	12,265	12,265	12,167	11,972	11,844
4	12,402	11,959	11,788	11,817	11,839
5	12,084	12,144	12,189	12,219	11,918
6	12,400	12,462	12,200	11,947	11,999
7	12,631	12,465	12,102	12,170	12,034
8	13,065	12,433	12,518	12,287	12,068
9	12,692	12,819	12,636	12,366	12,395
10	12,921	13,050	12,488	12,589	12,091
11	13,250	12,672	12,806	12,300	12,399
12	14,151	13,533	13,280	13,136	12,697
13	13,436	13,638	13,099	12,921	12,746
14	14,006	13,708	13,654	13,147	12,881
15	14,639	14,069	13,790	13,741	13,256
16	15,431	14,830	14,289	13,801	13,705
17	14,828	14,853	14,573	14,075	13,603
18	15,397	14,871	14,505	14,266	13,964
19	15,694	15,158	14,659	14,193	13,751
20	16,104	15,555	15,042	14,565	14,111
PV Inc Stream	197,597	194,311	191,150	188,323	185,510
PV Annuity	13,282	13,061	12,848	12,658	12,469

Note: 3 Percent Discount Rate

B: Predicted Wife's Full Time Income - US
Air Force Enlisted Wives (\$)

Year	Number of Moves				
	5	6	7	8	9
1	8,801	8,801	8,801	8,801	8,801
2	9,112	9,112	9,112	9,112	9,112
3	9,271	9,271	9,195	9,042	8,944
4	9,507	9,155	9,020	9,044	9,062
5	9,400	9,451	9,489	9,514	9,274
6	9,535	9,586	9,374	9,181	9,224
7	9,967	9,833	9,539	9,597	9,489
8	10,268	9,755	9,827	9,643	9,468
9	10,011	10,119	9,973	9,757	9,783
10	10,227	10,337	9,880	9,967	9,565
11	10,588	10,113	10,229	9,816	9,902
12	10,985	10,493	10,295	10,185	9,839
13	10,780	10,955	10,513	10,372	10,232
14	11,059	10,822	10,785	10,378	10,167
15	11,494	11,038	10,819	10,786	10,400
16	11,594	11,134	10,720	10,350	10,283
17	11,366	11,395	11,181	10,795	10,429
18	11,967	11,553	11,269	11,086	10,852
19	12,104	11,686	11,297	10,936	10,594
20	12,715	12,275	11,867	11,488	11,129
PV Inc Stream	154,107	151,519	149,029	146,821	144,614
PV Annuity	10,358	10,184	10,017	9,869	9,720

Note: 3 Percent Discount Rate

C: Predicted Wife's Full Time Income - US
Army Officer Wives (\$)

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	11,052	11,052	11,052	11,052	11,052
2	11,125	11,125	11,125	11,125	11,125
3	11,915	11,915	11,821	11,630	11,507
4	12,327	11,887	11,716	11,746	11,767
5	11,974	12,033	12,078	12,108	11,810
6	12,107	12,167	11,912	11,665	11,715
7	12,700	12,533	12,168	12,236	12,100
8	13,232	12,592	12,678	12,444	12,222
9	12,290	12,412	12,235	11,974	12,001
10	13,087	13,217	12,648	12,750	12,246
11	13,316	12,735	12,870	12,361	12,461
12	13,865	13,260	13,012	12,871	12,441
13	13,538	13,740	13,198	13,019	12,842
14	14,464	14,156	14,100	13,577	13,302
15	14,321	13,764	13,491	13,443	12,968
16	14,953	14,371	13,846	13,374	13,281
17	14,695	14,719	14,442	13,949	13,481
18	15,131	14,614	14,255	14,019	13,722
19	15,680	15,145	14,646	14,181	13,739
20	16,005	15,459	14,950	14,475	14,024
PV Inc Stream	195,687	192,421	189,288	186,482	183,681
PV Annuity	13,153	12,934	12,723	12,535	12,346

Note: 3 Percent Discount Rate

**D: Predicted Wife's Full-Time Income - US
Army Enlisted Wives (\$)**

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	8,856	8,856	8,856	8,856	8,856
2	9,086	9,086	9,086	9,086	9,086
3	9,248	9,248	9,172	9,020	8,921
4	9,586	9,231	9,095	9,119	9,137
5	9,269	9,319	9,356	9,381	9,145
6	9,598	9,650	9,436	9,242	9,285
7	9,896	9,764	9,472	9,529	9,422
8	10,089	9,585	9,656	9,475	9,303
9	10,020	10,128	9,982	9,765	9,792
10	10,336	10,448	9,986	10,073	9,667
11	10,619	10,143	10,259	9,845	9,931
12	11,184	10,683	10,482	10,369	10,017
13	10,808	10,983	10,540	10,398	10,258
14	11,302	11,060	11,022	10,606	10,390
15	11,413	10,960	10,742	10,710	10,326
16	11,568	11,109	10,696	10,327	10,260
17	11,721	11,752	11,531	11,133	10,755
18	11,838	11,429	11,148	10,967	10,735
19	12,208	11,787	11,395	11,031	10,686
20	12,439	12,010	11,610	11,239	10,888
PV Inc Stream	154,334	151,751	149,254	147,037	144,825
PV Annuity	10,374	10,200	10,032	9,883	9,734

Note: 3 Percent Discount Rate

**E: Predicted Wife's Full Time Income - US
Navy Officer Wives (\$)**

Year	Number of Moves				
	5	6	7	8	9
1	10,926	10,926	10,926	10,926	10,926
2	10,911	10,911	10,911	10,911	10,911
3	11,632	11,632	11,540	11,354	11,233
4	11,842	11,419	11,255	11,283	11,304
5	11,399	11,455	11,498	11,526	11,243
6	11,724	11,782	11,534	11,295	11,345
7	12,411	12,247	11,891	11,957	11,824
8	12,657	12,044	12,127	11,903	11,691
9	11,995	12,114	11,942	11,686	11,714
10	12,466	12,590	12,048	12,145	11,665
11	12,787	12,229	12,358	11,870	11,966
12	13,168	12,593	12,358	12,224	11,815
13	12,902	13,095	12,578	12,408	12,239
14	13,334	13,050	12,999	12,516	12,263
15	14,102	13,554	13,285	13,238	12,770
16	14,301	13,745	13,243	12,791	12,701
17	14,416	14,440	14,168	13,684	13,225
18	14,344	13,854	13,513	13,290	13,009
19	15,152	14,635	14,153	13,703	13,277
20	15,827	15,287	14,784	14,314	13,869
PV Inc Stream	188,851	185,712	182,688	179,989	177,293
PV Annuity	12,694	12,483	12,280	12,098	11,917

Note: 3 Percent Discount Rate

F: Predicted Wife's Full Time Income - US
Navy Enlisted Wives (\$)

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	9,024	9,024	9,024	9,024	9,024
2	9,518	9,518	9,518	9,518	9,518
3	9,844	9,844	9,764	9,601	9,497
4	10,062	9,690	9,547	9,572	9,592
5	9,806	9,858	9,898	9,925	9,675
6	10,220	10,275	10,048	9,841	9,887
7	10,408	10,268	9,961	10,021	9,909
8	10,937	10,391	10,468	10,272	10,086
9	10,569	10,683	10,529	10,300	10,328
10	10,922	11,040	10,551	10,644	10,214
11	11,132	10,633	10,755	10,321	10,411
12	11,541	11,024	10,816	10,700	10,337
13	11,254	11,437	10,976	10,828	10,682
14	11,661	11,411	11,372	10,942	10,720
15	12,119	11,638	11,406	11,372	10,965
16	12,466	11,971	11,526	11,128	11,056
17	12,253	12,285	12,054	11,638	11,244
18	12,517	12,085	11,787	11,596	11,351
19	13,053	12,602	12,183	11,794	11,425
20	13,583	13,114	12,678	12,273	11,889
PV Inc Stream	162,810	160,067	157,423	155,074	152,735
PV Annuity	10,943	10,759	10,581	10,423	10,266

Note: 3 Percent Discount Rate

G: Predicted Wife's Full Time Income - US
Marine Officer Wives (\$)

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	10,536	10,536	10,536	10,536	10,536
2	11,445	11,445	11,445	11,445	11,445
3	11,516	11,516	11,425	11,241	11,122
4	11,556	11,143	10,983	11,011	11,031
5	11,360	11,416	11,459	11,487	11,205
6	11,632	11,690	11,444	11,207	11,256
7	11,783	11,628	11,289	11,352	11,226
8	12,491	11,886	11,968	11,747	11,538
9	11,780	11,898	11,728	11,477	11,504
10	12,756	12,883	12,328	12,428	11,937
11	12,603	12,052	12,180	11,699	11,793
12	13,210	12,633	12,397	12,262	11,853
13	12,917	13,111	12,593	12,422	12,254
14	13,515	13,227	13,175	12,686	12,429
15	13,959	13,416	13,149	13,103	12,640
16	14,480	13,917	13,408	12,951	12,860
17	14,325	14,348	14,078	13,597	13,141
18	14,715	14,213	13,863	13,634	13,345
19	15,478	14,950	14,457	13,998	13,562
20	15,644	15,110	14,613	14,149	13,708
PV Inc Stream	188,207	185,081	182,059	179,359	176,657
PV Annuity	12,650	12,440	12,237	12,056	11,874

Note: 3 Percent Discount Rate

H: Predicted Wife's Full Time Income - US
Marine Enlisted Wives (\$)

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	8,426	8,426	8,426	8,426	8,426
2	8,669	8,669	8,669	8,669	8,669
3	8,989	8,989	8,916	8,768	8,672
4	9,429	9,080	8,946	8,970	8,988
5	8,973	9,022	9,058	9,082	8,853
6	9,343	9,393	9,185	8,996	9,038
7	9,612	9,483	9,199	9,255	9,151
8	9,905	9,410	9,480	9,302	9,134
9	9,758	9,864	9,721	9,510	9,536
10	10,109	10,218	9,767	9,852	9,455
11	10,646	10,168	10,285	9,870	9,956
12	10,851	10,365	10,170	10,061	9,719
13	10,454	10,623	10,195	10,058	9,922
14	10,896	10,662	10,626	10,225	10,017
15	11,534	11,076	10,856	10,823	10,435
16	11,834	11,364	10,942	10,565	10,496
17	11,237	11,266	11,055	10,673	10,311
18	11,423	11,028	10,757	10,582	10,359
19	12,148	11,728	11,338	10,976	10,633
20	12,679	12,242	11,835	11,457	11,098
PV Inc Stream	151,015	148,447	145,990	143,804	141,634
PV Annuity	10,151	9,978	9,813	9,666	9,520

Note: 3 Percent Discount Rate

I: Values for "WMOVES"

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	1.00	1.00	1.00	1.00	1.00
2	1.00	1.00	1.00	1.00	1.00
3	1.00	1.00	1.17	1.50	1.75
4	1.00	1.67	2.00	2.00	2.00
5	2.00	2.00	2.00	2.00	2.58
6	2.00	2.00	2.25	3.00	3.00
7	2.00	2.33	3.00	3.00	3.33
8	2.00	3.00	3.00	3.50	4.00
9	3.00	3.00	3.42	4.00	4.08
10	3.00	3.00	4.00	4.00	5.00
11	3.00	4.00	4.00	5.00	5.00
12	3.00	4.00	4.58	5.00	5.92
13	4.00	4.00	5.00	5.50	6.00
14	4.00	4.67	5.00	6.00	6.67
15	4.00	5.00	5.67	6.00	7.00
16	4.00	5.00	6.00	7.00	7.42
17	5.00	5.33	6.00	7.00	8.00
18	5.00	6.00	6.83	7.50	8.25
19	5.00	6.00	7.00	8.00	9.00
20	5.00	6.00	7.00	8.00	9.00

**J: Variable Values for Wage Equation
Air Force Officer Wives**

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.32	0.24	0.16	0.08	23
2	0.35	0.31	0.00	0.10	24
3	0.23	0.40	0.14	0.14	25
4	0.11	0.32	0.32	0.18	26
5	0.07	0.30	0.28	0.09	27
6	0.05	0.27	0.45	0.07	28
7	0.04	0.25	1.13	0.14	29
8	0.04	0.21	0.57	0.07	30
9	0.00	0.22	1.06	0.06	31
10	0.02	0.14	0.75	0.09	32
11	0.00	0.13	1.12	0.13	33
12	0.00	0.27	1.23	0.06	34
13	0.00	0.16	1.41	0.06	35
14	0.00	0.21	1.46	0.10	36
15	0.00	0.27	1.70	0.09	37
16	0.01	0.35	1.59	0.07	38
17	0.00	0.32	2.18	0.09	39
18	0.00	0.34	2.27	0.07	40
19	0.00	0.27	2.47	0.01	41
20	0.00	0.28	3.26	0.04	42

Constant Values

EDUCATION	15
BLACK	0.0223
ASIAN	0.0196

K: Variable Values for Wage Equation
 Air Force Enlisted Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.25	0.30	0.41	0.16	20
2	0.43	0.25	0.10	0.05	21
3	0.33	0.20	0.39	0.13	22
4	0.20	0.17	0.34	0.19	23
5	0.15	0.27	0.76	0.12	24
6	0.08	0.18	1.10	0.11	25
7	0.05	0.25	0.90	0.19	26
8	0.05	0.21	1.09	0.09	27
9	0.03	0.22	1.17	0.05	28
10	0.00	0.19	1.56	0.11	29
11	0.02	0.20	1.86	0.07	30
12	0.04	0.21	1.66	0.09	31
13	0.02	0.30	2.03	0.15	32
14	0.01	0.32	3.19	0.15	33
15	0.00	0.32	2.67	0.16	34
16	0.00	0.21	3.45	0.11	35
17	0.00	0.26	3.62	0.09	36
18	0.00	0.37	3.63	0.13	37
19	0.00	0.24	3.35	0.17	38
20	0.00	0.30	3.24	0.10	39

Constant Values

EDUCATION 12.5
 BLACK 0.0580
 ASIAN 0.0592

L: Variable Values for Wage Equation
Army Officer Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>OVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.11	0.26	0.79	0.11	23
2	0.52	0.10	0.61	0.06	24
3	0.18	0.31	0.95	0.13	25
4	0.05	0.30	0.65	0.11	26
5	0.06	0.31	0.71	0.20	27
6	0.08	0.21	1.13	0.13	28
7	0.05	0.27	1.14	0.09	29
8	0.00	0.33	1.60	0.09	30
9	0.04	0.13	1.88	0.13	31
10	0.02	0.25	1.79	0.07	32
11	0.02	0.21	2.45	0.08	33
12	0.02	0.23	2.17	0.08	34
13	0.02	0.26	2.28	0.14	35
14	0.00	0.44	3.03	0.10	36
15	0.00	0.24	3.23	0.06	37
16	0.00	0.29	3.41	0.04	38
17	0.00	0.35	3.71	0.06	39
18	0.00	0.31	3.31	0.05	40
19	0.00	0.34	3.61	0.07	41
20	0.00	0.35	4.87	0.11	42

Constant Values

EDUCATION	15
BLACK	0.0433
ASIAN	0.0147

M: Variable Values for Wage Equation
 Army Enlisted Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.28	0.22	0.28	0.06	21
2	0.48	0.18	0.18	0.13	22
3	0.41	0.10	0.33	0.13	23
4	0.09	0.12	0.76	0.03	24
5	0.12	0.19	1.76	0.19	25
6	0.10	0.14	1.26	0.09	26
7	0.07	0.15	1.49	0.14	27
8	0.04	0.12	2.38	0.14	28
9	0.03	0.21	2.05	0.10	29
10	0.00	0.23	2.46	0.14	30
11	0.00	0.25	3.63	0.11	31
12	0.00	0.39	4.16	0.14	32
13	0.02	0.27	2.97	0.08	33
14	0.02	0.38	3.68	0.11	34
15	0.00	0.32	5.32	0.04	35
16	0.00	0.13	3.71	0.10	36
17	0.00	0.42	4.58	0.13	37
18	0.00	0.28	4.97	0.03	38
19	0.00	0.28	4.59	0.17	39
20	0.00	0.20	4.53	0.20	40

<u>Constant Values</u>	
EDUCATION	12.4
BLACK	0.1094
ASIAN	0.0704

N: Variable Values for Wage Equation
 Navy Officer Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.25	0.44	0.10	0.06	23
2	0.24	0.29	0.14	0.14	24
3	0.18	0.42	0.03	0.06	25
4	0.14	0.35	0.07	0.07	26
5	0.11	0.33	0.38	0.16	27
6	0.13	0.28	0.40	0.06	28
7	0.07	0.41	0.54	0.07	29
8	0.08	0.35	0.65	0.08	30
9	0.00	0.21	0.66	0.05	31
10	0.03	0.26	0.57	0.17	32
11	0.08	0.23	0.98	0.13	33
12	0.06	0.21	1.29	0.06	34
13	0.00	0.26	1.65	0.06	35
14	0.00	0.24	1.29	0.06	36
15	0.00	0.34	1.17	0.03	37
16	0.02	0.28	1.60	0.09	38
17	0.00	0.45	1.33	0.14	39
18	0.03	0.28	1.95	0.10	40
19	0.00	0.38	1.88	0.08	41
20	0.00	0.40	1.50	0.03	42

<u>Constant Values</u>	
EDUCATION	14
BLACK	0.0144
ASIAN	0.0144

O: Variable Values for Wage Equation
 Navy Enlisted Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.17	0.21	0.83	0.08	21
2	0.71	0.25	0.04	0.07	22
3	0.37	0.26	0.12	0.05	23
4	0.29	0.22	0.08	0.14	24
5	0.19	0.23	0.41	0.05	25
6	0.16	0.29	0.39	0.12	26
7	0.10	0.22	0.68	0.11	27
8	0.05	0.30	0.59	0.10	28
9	0.01	0.27	0.77	0.07	29
10	0.03	0.27	0.74	0.10	30
11	0.04	0.22	1.39	0.08	31
12	0.04	0.25	1.47	0.13	32
13	0.00	0.25	1.30	0.10	33
14	0.00	0.26	1.42	0.08	34
15	0.00	0.31	1.96	0.06	35
16	0.00	0.3	1.75	0.18	36
17	0.00	0.34	2.03	0.05	37
18	0.00	0.26	1.77	0.06	38
19	0.00	0.38	2.56	0.18	39
20	0.00	0.35	1.73	0.12	40

Constant Values

EDUCATION	12.8
BLACK	0.0347
ASIAN	0.0970

P: Variable Values for Wage Equation
 Marine Officer Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.27	0.27	0.00	0.18	21
2	0.77	0.47	0.00	0.13	22
3	0.28	0.36	0.08	0.10	23
4	0.12	0.21	0.06	0.03	24
5	0.14	0.30	0.34	0.18	25
6	0.12	0.24	0.15	0.15	26
7	0.10	0.14	0.08	0.14	27
8	0.04	0.26	0.23	0.11	28
9	0.02	0.12	0.20	0.16	29
10	0.02	0.34	0.32	0.15	30
11	0.03	0.16	0.22	0.31	31
12	0.04	0.18	0.46	0.07	32
13	0.00	0.24	0.48	0.24	33
14	0.00	0.27	0.52	0.12	34
15	0.00	0.27	0.51	0.14	35
16	0.00	0.31	0.82	0.18	36
17	0.00	0.34	0.66	0.03	37
18	0.00	0.35	0.86	0.16	38
19	0.00	0.41	0.91	0.06	39
20	0.00	0.31	1.12	0.04	40

Constant Values
 EDUCATION 14.9
 BLACK 0.0115
 ASIAN 0.0242

Q: Variable Values for Wage Equation
 Marine Enlisted Wives

<u>Year</u>	<u>LT12</u>	<u>SKILL</u>	<u>SOVERSEAS</u>	<u>BOONIES</u>	<u>AGE</u>
1	0.31	0.19	0.38	0.12	19
2	0.81	0.12	0.00	0.12	20
3	0.43	0.14	0.02	0.09	21
4	0.40	0.25	0.38	0.13	22
5	0.21	0.14	0.18	0.18	23
6	0.15	0.17	0.47	0.09	24
7	0.09	0.14	0.15	0.15	25
8	0.08	0.14	0.47	0.16	26
9	0.08	0.19	0.20	0.13	27
10	0.03	0.19	0.22	0.09	28
11	0.03	0.29	0.23	0.09	29
12	0.02	0.22	0.24	0.13	30
13	0.00	0.21	0.76	0.17	31
14	0.05	0.21	0.44	0.09	32
15	0.08	0.33	0.36	0.08	33
16	0.00	0.33	0.67	0.17	34
17	0.00	0.23	1.52	0.11	35
18	0.00	0.17	1.69	0.21	36
19	0.00	0.33	1.21	0.33	37
20	0.00	0.29	0.94	0.06	38

Constant Values
 EDUCATION 12.5
 BLACK 0.0615
 ASIAN 0.0624

**Appendix D: Probability of the Wife Working - Overseas:
Results and Input Values**

**A: Probability of Working
Officer Wives - Overseas**

Year	Number of Moves				
	5	6	7	8	9
1	0.385	0.385	0.385	0.385	0.385
2	0.544	0.544	0.544	0.544	0.544
3	0.575	0.575	0.553	0.504	0.479
4	0.581	0.454	0.420	0.438	0.452
5	0.395	0.432	0.460	0.479	0.422
6	0.420	0.458	0.355	0.365	0.397
7	0.474	0.449	0.376	0.418	0.408
8	0.520	0.370	0.421	0.393	0.370
9	0.337	0.409	0.394	0.363	0.398
10	0.380	0.454	0.349	0.407	0.331
11	0.418	0.312	0.386	0.312	0.368
12	0.481	0.369	0.358	0.369	0.322
13	0.306	0.411	0.335	0.344	0.352
14	0.345	0.334	0.376	0.320	0.316
15	0.421	0.349	0.347	0.394	0.349
16	0.467	0.393	0.339	0.306	0.343
17	0.322	0.404	0.411	0.374	0.343
18	0.376	0.340	0.340	0.362	0.369
19	0.441	0.404	0.376	0.359	0.345
20	0.537	0.499	0.470	0.451	0.437
Average	0.436	0.417	0.400	0.394	0.387

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

B: Probability of Working
Enlisted Wives - Overseas

Year	Number of Moves				
	5	6	7	8	9
1	0.310	0.310	0.310	0.310	0.310
2	0.403	0.403	0.403	0.403	0.403
3	0.466	0.466	0.443	0.396	0.372
4	0.512	0.387	0.354	0.372	0.385
5	0.339	0.374	0.401	0.420	0.364
6	0.388	0.425	0.326	0.335	0.366
7	0.436	0.411	0.341	0.381	0.372
8	0.491	0.343	0.392	0.365	0.343
9	0.317	0.387	0.372	0.342	0.377
10	0.364	0.437	0.334	0.391	0.317
11	0.439	0.331	0.407	0.331	0.388
12	0.485	0.373	0.362	0.373	0.326
13	0.318	0.424	0.348	0.356	0.365
14	0.380	0.368	0.412	0.354	0.349
15	0.436	0.363	0.362	0.408	0.363
16	0.499	0.423	0.369	0.334	0.372
17	0.341	0.425	0.431	0.394	0.362
18	0.414	0.378	0.377	0.400	0.407
19	0.485	0.447	0.419	0.400	0.387
20	0.540	0.502	0.474	0.455	0.440
Average	0.418	0.399	0.382	0.376	0.369

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

Appendix E: Probability of Working Wives Working Full Time - Overseas: Results and Input Values

A: Probability of Working Wives Working Full Time Officer Wives - Overseas

Year	Number of Moves				
	5	6	7	8	9
1	0.584	0.584	0.584	0.584	0.584
2	0.697	0.697	0.697	0.697	0.697
3	0.700	0.700	0.688	0.662	0.648
4	0.684	0.613	0.593	0.604	0.612
5	0.567	0.589	0.606	0.617	0.583
6	0.565	0.588	0.524	0.530	0.551
7	0.592	0.577	0.532	0.558	0.552
8	0.621	0.530	0.562	0.544	0.530
9	0.487	0.534	0.525	0.505	0.527
10	0.509	0.556	0.489	0.527	0.477
11	0.519	0.449	0.499	0.449	0.487
12	0.553	0.483	0.476	0.483	0.451
13	0.432	0.502	0.452	0.458	0.464
14	0.449	0.441	0.469	0.432	0.429
15	0.500	0.454	0.453	0.483	0.454
16	0.522	0.475	0.440	0.418	0.443
17	0.436	0.490	0.494	0.470	0.450
18	0.464	0.441	0.440	0.455	0.459
19	0.495	0.472	0.455	0.443	0.434
20	0.572	0.549	0.531	0.520	0.511
Average	0.547	0.536	0.525	0.522	0.517

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

B: Probability of Working Wives Working Full Time
 Enlisted Wives - Overseas

Year	Number of Moves				
	5	6	7	8	9
1	0.554	0.554	0.554	0.554	0.554
2	0.630	0.630	0.630	0.630	0.630
3	0.659	0.659	0.646	0.618	0.604
4	0.678	0.606	0.586	0.597	0.606
5	0.563	0.586	0.603	0.614	0.580
6	0.590	0.613	0.549	0.556	0.576
7	0.616	0.601	0.556	0.582	0.576
8	0.636	0.546	0.578	0.560	0.546
9	0.524	0.570	0.561	0.541	0.564
10	0.549	0.595	0.529	0.566	0.517
11	0.590	0.520	0.570	0.520	0.558
12	0.608	0.539	0.532	0.539	0.507
13	0.494	0.564	0.515	0.521	0.527
14	0.533	0.525	0.553	0.515	0.512
15	0.557	0.511	0.510	0.540	0.511
16	0.600	0.554	0.519	0.495	0.521
17	0.488	0.542	0.546	0.523	0.503
18	0.534	0.510	0.510	0.525	0.529
19	0.580	0.557	0.539	0.528	0.519
20	0.617	0.594	0.577	0.566	0.557
Average	0.580	0.569	0.558	0.555	0.550

Note: The input values for the independent variables are the same as the variable values for the probability of the wife working - CONUS (see Appendix A).

**Appendix F: Probability of Working a Second
Job - CONUS: Results and Input Values**

**A: Probability of Member Working
Officers - CONUS**

Year	Number of Moves				
	5	6	7	8	9
1	0.029	0.029	0.029	0.029	0.029
2	0.030	0.030	0.030	0.030	0.030
3	0.035	0.035	0.034	0.031	0.029
4	0.041	0.032	0.030	0.031	0.032
5	0.030	0.032	0.034	0.035	0.031
6	0.034	0.037	0.030	0.030	0.032
7	0.040	0.038	0.033	0.036	0.035
8	0.046	0.034	0.038	0.036	0.034
9	0.034	0.039	0.038	0.036	0.038
10	0.039	0.045	0.037	0.041	0.035
11	0.046	0.037	0.043	0.037	0.042
12	0.050	0.040	0.039	0.040	0.036
13	0.038	0.047	0.040	0.041	0.042
14	0.042	0.041	0.045	0.040	0.040
15	0.046	0.040	0.040	0.044	0.040
16	0.055	0.047	0.042	0.039	0.042
17	0.039	0.047	0.048	0.044	0.041
18	0.045	0.042	0.042	0.044	0.045
19	0.049	0.046	0.043	0.042	0.040
20	0.059	0.054	0.051	0.049	0.048
Average	0.041	0.040	0.038	0.038	0.037

B: Probability of Member Working
Enlisted - CONUS

Year	Number of Moves				
	5	6	7	8	9
1	0.085	0.085	0.085	0.085	0.085
2	0.084	0.084	0.084	0.084	0.084
3	0.093	0.093	0.091	0.085	0.082
4	0.106	0.090	0.086	0.089	0.090
5	0.083	0.087	0.090	0.092	0.086
6	0.090	0.095	0.083	0.084	0.088
7	0.100	0.097	0.088	0.093	0.092
8	0.109	0.090	0.096	0.092	0.090
9	0.088	0.097	0.095	0.091	0.096
10	0.098	0.107	0.093	0.101	0.091
11	0.103	0.089	0.099	0.089	0.096
12	0.118	0.102	0.100	0.102	0.095
13	0.090	0.105	0.094	0.096	0.097
14	0.098	0.097	0.103	0.095	0.094
15	0.102	0.093	0.092	0.099	0.093
16	0.116	0.106	0.098	0.093	0.099
17	0.088	0.099	0.100	0.095	0.091
18	0.094	0.090	0.090	0.092	0.093
19	0.097	0.092	0.089	0.087	0.085
20	0.106	0.101	0.097	0.095	0.093
Average	0.097	0.095	0.093	0.092	0.091

**C: Input Values for Probability Equations
Officers**

Year	BOONIES	MNONWAGE	MTOTDEBT	MILINC	MRANK	KIDS
1	0.07	1317.90	4.74	20068.08	15.62	1.20
2	0.17	734.29	4.75	16448.78	14.55	0.41
3	0.21	666.85	4.89	19184.84	15.15	0.58
4	0.15	869.89	4.55	22392.04	15.32	0.82
5	0.18	783.14	4.51	23601.29	15.71	0.96
6	0.13	1002.24	4.21	25746.55	15.86	1.16
7	0.15	1078.28	4.43	26288.20	15.87	1.28
8	0.14	2653.62	4.10	27903.43	15.95	1.30
9	0.18	1531.22	4.11	28505.43	16.02	1.49
10	0.15	1661.28	4.17	29569.98	16.10	1.64
11	0.15	1560.41	4.30	30900.68	16.26	1.86
12	0.14	1589.89	4.21	31735.21	16.56	1.76
13	0.18	2053.26	4.13	32653.64	16.63	1.94
14	0.16	1955.17	4.03	33188.38	16.73	2.10
15	0.13	2725.75	3.98	34347.89	16.91	1.84
16	0.10	2664.67	4.23	35434.61	17.08	2.09
17	0.14	3644.69	4.13	35513.73	17.23	2.07
18	0.12	2909.20	4.46	37384.12	17.63	2.16
19	0.12	2922.48	4.19	37923.50	17.57	2.06
20	0.10	4678.05	4.47	38194.71	17.58	2.04

Constant Value
SEPARATE 2.938

Note: The values for "MMONTHS" are the same as the values for "SMONTHS" (see Appendix A).

**D: Input Values for Probability Equations
Enlisted Personnel**

Year	BOONIES	MNONWAGE	MTOTDEBT	MILINC	MRANK	KIDS
1	0.08	1139.61	4.16	11414.55	4.37	1.08
2	0.14	832.54	3.61	8633.42	3.26	0.67
3	0.13	414.22	3.77	9344.74	3.64	0.69
4	0.20	638.43	4.01	10375.63	4.17	0.92
5	0.19	524.48	4.28	12313.20	4.56	1.01
6	0.14	787.12	4.24	12746.65	4.84	1.14
7	0.13	895.61	4.28	13094.89	5.01	1.32
8	0.13	591.05	4.39	13878.64	5.33	1.41
9	0.14	904.97	4.34	14269.35	5.48	1.61
10	0.16	918.44	4.56	15213.61	5.84	1.73
11	0.12	935.49	4.52	15441.04	5.89	1.68
12	0.13	816.93	4.66	15668.80	6.10	1.93
13	0.13	504.35	4.54	16357.50	6.25	1.96
14	0.12	1251.38	4.63	16796.08	6.42	2.00
15	0.14	990.73	4.51	17281.26	6.58	1.99
16	0.14	1251.95	4.80	17546.41	6.66	2.16
17	0.15	1040.83	4.54	18006.50	6.85	2.11
18	0.15	997.74	4.61	18622.51	7.06	2.06
19	0.16	947.58	4.47	18927.18	7.16	1.96
20	0.16	986.18	4.64	19986.35	7.50	2.10

Constant Value
SEPARATE 3.185

Note: The values for "MMONTHS" are the same as the values for "SMONTHS" (see Appendix A).

Appendix G: Military Income: Equations, Results, and Input Values

A: Equations for Military Income

Officers

Dependent Variable: Military Income
 Sample Size: 2161
 Adjusted R-Square: .8294

<u>Variable</u>	<u>Parameter Estimate</u>	<u>t</u>	<u>Prob > t</u>
INTERCEPT	-7654.070	-2.394	0.0167
YEAR	532.741	8.771	0.0001
MAGE (age)	1182.833	7.601	0.0001
MAGE2 (age sq)	-4.708	-2.463	0.0139
OMA (master's)	99.575	0.369	0.7124
OPHD (PHD)	3463.422	5.621	0.0001
OED (ed level)	269.271	2.558	0.0106
MOVERSEA (month)	-2.070	-0.572	0.5671
MSEADUTY (month)	35.775	11.168	0.0001
FLTPAY (0/1)	4824.453	24.204	0.0001
PROPAY (0/1)	8545.370	9.897	0.0001
ACADEMY (0/1)	1596.842	6.604	0.0001

Enlisted

Dependent Variable: Military Income
 Sample Size: 1624
 Adjusted R-Square: .7209

<u>Variable</u>	<u>Parameter Estimate</u>	<u>t</u>	<u>Prob > t</u>
INTERCEPT	15090.694	9.600	0.0001
YEAR	709.329	20.115	0.0001
MAGE	-39.295	-0.404	0.6860
MAGE2	-0.185	-0.131	0.8957
EDLEVEL	99.830	1.983	0.0476
MOVERSEA	-2.790	-1.285	0.1988
MSEADUTY	19.444	9.582	0.0001
FLTPAY	548.019	1.653	0.0985
PROPAY	2237.052	8.461	0.0001

Source (5:15,17)

B: Expected Military Income - Officers

<u>Year</u>	<u>Air Force</u>	<u>Army</u>	<u>Navy</u>	<u>Marines</u>
1	24,930	24,262	24,585	24,028
2	25,672	24,047	26,321	24,825
3	27,170	26,887	28,165	25,889
4	29,754	27,488	29,754	27,498
5	30,080	29,157	30,561	29,641
6	31,917	31,862	31,591	31,277
7	32,668	32,196	34,213	32,548
8	34,651	33,578	34,864	34,085
9	35,481	34,323	36,171	35,116
10	37,603	36,163	38,758	35,677
11	39,338	37,545	40,393	37,458
12	40,804	38,567	41,882	39,594
13	41,549	40,540	42,784	41,163
14	43,400	41,390	44,895	42,218
15	44,449	42,989	45,978	43,303
16	45,909	44,197	47,633	44,958
17	46,546	46,116	48,410	46,252
18	47,678	46,703	50,479	47,823
19	49,547	48,349	49,811	49,420
20	50,053	49,843	52,818	49,390
<hr/>				
Total	759,197	736,202	780,065	742,162
Average	. 37,960	36,810	39,003	37,108
P.V.	544,766	527,766	558,766	531,632
Annuity	36,617	35,474	37,558	35,734

C: Expected Military Income - Enlisted

<u>Year</u>	<u>Air Force</u>	<u>Army</u>	<u>Navy</u>	<u>Marines</u>
1	16,327	16,251	16,649	16,334
2	16,974	16,906	17,089	16,905
3	17,659	17,556	17,890	17,587
4	18,307	18,189	18,784	18,291
5	18,942	18,831	19,654	19,020
6	19,607	19,506	20,203	19,704
7	20,331	20,230	20,928	20,426
8	20,952	20,821	21,867	21,129
9	21,663	21,581	22,694	21,901
10	22,250	22,277	23,347	22,421
11	22,947	22,946	23,991	23,317
12	23,625	23,580	24,843	23,847
13	24,141	24,313	25,555	24,597
14	24,890	24,744	26,182	25,030
15	25,535	25,475	26,972	25,703
16	26,101	26,023	27,700	26,284
17	26,762	26,553	28,511	26,912
18	27,480	27,284	28,861	27,513
19	28,065	28,071	29,926	28,423
20	28,716	28,584	31,126	28,938
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Total	451,274	449,722	472,770	454,283
Average	22,564	22,486	23,638	22,714
P.V.	326,201	325,046	340,792	328,224
Annuity	21,926	21,848	22,907	22,062

D: Input Values - Air Force Officers

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY	ACADEMY
1	22	0.89	0	0.21	0.24	0.05
2	23	0.13	0	0.25	0.13	0.04
3	24	1.79	0	0.37	0.05	0.11
4	25	4.19	0	0.60	0.04	0.16
5	26	5.76	0	0.43	0.00	0.17
6	27	9.13	0	0.40	0.05	0.23
7	28	11.55	0	0.30	0.03	0.20
8	29	13.47	0	0.36	0.05	0.25
9	30	18.38	0	0.35	0.01	0.12
10	31	14.38	0	0.44	0.03	0.17
11	32	19.28	0	0.46	0.07	0.10
12	33	23.49	0	0.51	0.04	0.15
13	34	26.51	0	0.37	0.06	0.06
14	35	27.31	0	0.53	0.02	0.08
15	36	30.17	0	0.44	0.04	0.04
16	37	33.70	0	0.43	0.04	0.13
17	38	40.54	0	0.37	0.00	0.08
18	39	40.90	0	0.31	0.01	0.07
19	40	51.31	0	0.41	0.01	0.11
20	41	52.78	0	0.26	0.00	0.10

Constant Values

OMA	0.4011
OPHD	0.1243
OED	17.4350

E: Input Values - Army Officers

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY	ACADEMY
1	22	1.74	0	0.11	0.21	0.05
2	23	3.35	0	0.10	0.00	0.13
3	24	6.64	0	0.15	0.13	0.13
4	25	12.68	0	0.11	0.03	0.24
5	26	13.23	0	0.20	0.03	0.09
6	27	17.05	0	0.13	0.18	0.28
7	28	17.77	0	0.09	0.09	0.18
8	29	28.04	0	0.04	0.13	0.09
9	30	32.71	0	0.06	0.02	0.19
10	31	33.29	0	0.13	0.04	0.13
11	32	40.40	0	0.09	0.06	0.13
12	33	43.96	0	0.04	0.04	0.15
13	34	39.14	0	0.16	0.04	0.14
14	35	49.74	0	0.10	0.03	0.05
15	36	50.50	0	0.13	0.02	0.15
16	37	52.00	0	0.10	0.02	0.14
17	38	56.84	0	0.14	0.06	0.16
18	39	59.88	0	0.05	0.02	0.17
19	40	64.51	0	0.13	0.03	0.07
20	41	69.80	0	0.17	0.02	0.11

Constant Values

OMA	0.4718
OPHD	0.1197
OED	17.7394

F: Input Values - Navy Officers

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY	ACADEMY
1	22	1.31	1.56	0.19	0.19	0.19
2	23	3.67	3.67	0.24	0.19	0.14
3	24	3.55	9.15	0.18	0.24	0.15
4	25	4.28	13.35	0.40	0.09	0.26
5	26	8.49	18.24	0.27	0.09	0.13
6	27	8.79	20.72	0.23	0.04	0.19
7	28	13.02	29.46	0.35	0.06	0.26
8	29	16.42	25.08	0.23	0.05	0.28
9	30	15.55	24.76	0.29	0.03	0.13
10	31	17.49	45.63	0.29	0.06	0.23
11	32	18.23	49.03	0.33	0.03	0.33
12	33	27.74	43.29	0.29	0.09	0.32
13	34	29.62	44.24	0.29	0.06	0.15
14	35	21.68	65.26	0.29	0.06	0.12
15	36	26.77	57.23	0.23	0.09	0.14
16	37	36.43	63.89	0.30	0.06	0.13
17	38	29.07	59.83	0.21	0.05	0.17
18	39	33.80	67.43	0.28	0.03	0.35
19	40	35.08	57.46	0.08	0.00	0.08
20	41	41.37	86.17	0.20	0.00	0.13

Constant Values

OMA	0.3117
OPHD	0.1169
OED	17.1948

G: Input Values - Marine Officers

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY	ACADEMY
1	22	0.36	0.36	0.55	0	0.09
2	23	0.60	0.00	0.37	0	0.20
3	24	3.33	0.67	0.31	0	0.10
4	25	4.33	0.58	0.36	0	0.03
5	26	6.50	1.43	0.45	0	0.16
6	27	8.38	4.03	0.47	0	0.15
7	28	10.84	4.38	0.42	0	0.18
8	29	15.72	4.45	0.47	0	0.09
9	30	17.02	4.41	0.37	0	0.14
10	31	18.66	3.62	0.23	0	0.04
11	32	21.69	6.28	0.28	0	0.06
12	33	23.96	8.29	0.39	0	0.14
13	34	24.32	7.20	0.44	0	0.12
14	35	28.48	10.18	0.36	0	0.09
15	36	30.54	7.38	0.35	0	0.00
16	37	36.69	5.33	0.41	0	0.05
17	38	40.60	6.34	0.37	0	0.11
18	39	42.19	8.49	0.41	0	0.08
19	40	47.59	12.72	0.44	0	0.06
20	41	51.38	7.62	0.19	0	0.08

Constant Values

OMA	0.3111
OPHD	0.0111
OED	16.8111

H: Input Values - Air Force Enlisted

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY
1	19	0.02	0	0.02	0.00
2	20	1.85	0	0.00	0.00
3	21	3.88	0	0.01	0.01
4	22	6.67	0	0.04	0.00
5	23	12.32	0	0.02	0.00
6	24	14.93	0	0.04	0.00
7	25	16.11	0	0.08	0.02
8	26	16.47	0	0.05	0.01
9	27	24.52	0	0.02	0.05
10	28	26.21	0	0.10	0.00
11	29	35.14	0	0.05	0.04
12	30	36.19	0	0.09	0.04
13	31	41.49	0	0.02	0.00
14	32	48.60	0	0.10	0.03
15	33	51.25	0	0.13	0.02
16	34	66.40	0	0.04	0.02
17	35	57.18	0	0.04	0.01
18	36	65.26	0	0.03	0.05
19	37	66.55	0	0.07	0.01
20	38	70.64	0	0.04	0.02

Constant Value
EDLEVEL 13.3277

I: Input Values - Army Enlisted

YEAR	MAGE	MOVERSEA	MSEADUTY	FLTPAY	PROPAY
1	20	1.67	0	0.03	0.00
2	21	4.38	0	0.03	0.00
3	22	8.67	0	0.03	0.00
4	23	12.94	0	0.00	0.00
5	24	26.00	0	0.03	0.00
6	25	24.86	0	0.01	0.01
7	26	32.17	0	0.08	0.03
8	27	41.23	0	0.00	0.03
9	28	39.37	0	0.01	0.07
10	29	40.41	0	0.00	0.09
11	30	46.68	0	0.05	0.09
12	31	57.71	0	0.02	0.10
13	32	56.68	0	0.03	0.13
14	33	60.21	0	0.00	0.04
15	34	73.85	0	0.00	0.09
16	35	70.68	0	0.03	0.03
17	36	86.32	0	0.00	0.00
18	37	83.62	0	0.00	0.03
19	38	92.79	0	0.00	0.10
20	39	77.67	0	0.07	0.00

Constant Value
EDLEVEL 13.0224

J: Input Values - Navy Enlisted

YEAR	MAGE	MC	RSRA	MSEADUTY	FLTPAY	PROPAY
1	19	0.88		3.54	0.04	0.13
2	20	1.75		6.29	0.07	0.00
3	21	3.84		11.98	0.05	0.02
4	22	7.04		17.20	0.06	0.08
5	23	12.29		25.77	0.00	0.12
6	24	13.84		26.83	0.01	0.06
7	25	18.15		31.59	0.02	0.05
8	26	17.92		34.69	0.05	0.14
9	27	26.93		39.68	0.10	0.17
10	28	22.01		43.47	0.01	0.15
11	29	29.51		48.10	0.06	0.10
12	30	36.38		59.34	0.09	0.09
13	31	32.58		64.33	0.03	0.08
14	32	31.11		61.08	0.00	0.10
15	33	38.00		61.96	0.04	0.15
16	34	42.68		79.80	0.05	0.03
17	35	50.53		85.66	0.08	0.05
18	36	46.61		73.87	0.00	0.03
19	37	49.24		88.35	0.00	0.09
20	38	43.92		112.12	0.00	0.12

Constant Value
EDLEVEL 12.8626

K: Input Values - Marine Enlisted

YEAR	MAGE	MOVERSEA	MSREADUTY	FLTPAY	PROPAY
1	19	0.88	0.08	0.00	0.04
2	20	1.38	0.00	0.00	0.00
3	21	4.52	0.89	0.02	0.00
4	22	10.10	1.00	0.00	0.03
5	23	10.85	1.70	0.02	0.05
6	24	10.56	1.36	0.03	0.06
7	25	11.76	1.79	0.01	0.09
8	26	18.95	1.53	0.01	0.12
9	27	14.95	2.72	0.03	0.15
10	28	21.66	3.94	0.01	0.09
11	29	23.83	2.92	0.00	0.21
12	30	25.09	3.37	0.00	0.15
13	31	33.95	4.21	0.10	0.17
14	32	34.77	3.35	0.05	0.09
15	33	32.11	6.89	0.06	0.06
16	34	39.94	5.78	0.00	0.06
17	35	48.68	4.34	0.00	0.07
18	36	58.07	7.45	0.00	0.03
19	37	43.46	6.88	0.00	0.13
20	38	58.19	8.94	0.03	0.06

Constant Value
EDLEVEL 12.6207

Appendix H: Total Family Income

**A: Total Family Income
Air Force Officers**

Year	Number of Moves				
	5	6	7	8	9
1	26,381	26,381	26,381	26,381	26,381
2	30,998	30,998	30,998	30,998	30,998
3	32,943	32,943	30,732	30,218	29,952
4	35,416	32,155	33,772	33,944	34,075
5	31,925	34,228	34,493	34,674	32,132
6	35,915	36,266	33,351	33,397	35,639
7	37,198	34,973	36,226	36,598	34,532
8	39,625	38,140	38,596	36,353	38,084
9	36,743	39,353	37,233	38,884	37,231
10	41,196	41,885	40,864	41,386	40,666
11	43,277	40,310	42,924	40,267	42,711
12	45,603	44,444	42,350	44,386	41,952
13	42,557	45,485	44,734	42,825	44,838
14	46,732	44,634	46,962	46,407	44,381
15	48,708	47,941	45,930	48,305	47,833
16	50,742	49,903	49,327	47,003	47,322
17	47,966	48,765	50,740	50,317	49,968
18	51,829	51,399	49,380	49,562	49,580
19	54,489	54,006	53,648	53,401	53,210
20	56,341	55,779	55,355	55,054	54,817
<hr/>					
Total	836,586	829,986	823,997	820,360	816,302
Average	41,829	41,499	41,200	41,018	40,815
P.V.	602,145	597,337	592,901	590,425	587,412
Annuity	40,474	40,150	39,852	39,686	39,483

**B: Total Family Income
Air Force Enlisted**

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	17,656	17,656	17,656	17,656	17,656
2	20,520	20,520	20,520	20,520	20,520
3	21,794	21,794	20,233	19,822	19,616
4	22,850	20,394	21,469	21,613	21,723
5	20,721	22,371	22,600	22,756	20,904
6	23,161	23,472	21,270	21,315	22,923
7	24,327	22,735	23,468	23,799	22,350
8	25,520	24,179	24,594	22,982	24,132
9	23,327	25,282	23,779	24,855	23,780
10	25,700	26,340	25,393	25,880	25,209
11	27,186	24,816	26,832	24,769	26,616
12	28,300	27,226	25,743	27,172	25,368
13	25,972	28,291	27,544	26,238	27,646
14	28,661	27,157	28,890	28,315	26,886
15	29,938	29,196	27,787	29,546	29,086
16	31,104	30,314	29,755	28,037	28,349
17	28,982	29,748	31,117	30,710	30,370
18	31,941	31,516	30,096	30,271	30,283
19	33,271	32,807	32,457	32,211	32,018
20	34,747	34,241	33,856	33,581	33,362
<hr/>					
Total	525,676	520,054	515,058	512,047	508,797
Average	26,284	26,003	25,753	25,602	25,440
P.V.	380,158	376,102	372,431	370,404	368,021
Annuity	25,553	25,280	25,033	24,897	24,737

**C: Total Family Income
Army Officers**

Year	Number of Moves				
	5	6	7	8	9
1	25,688	25,688	25,688	25,688	25,688
2	29,288	29,288	29,288	29,288	29,288
3	32,624	32,624	30,343	29,830	29,565
4	33,204	29,850	31,532	31,708	31,842
5	30,943	33,324	33,594	33,779	31,158
6	35,846	36,201	33,207	33,258	35,575
7	36,787	34,485	35,793	36,176	34,037
8	38,647	37,119	37,591	35,270	37,067
9	35,480	38,163	35,975	37,699	35,977
10	39,805	40,515	39,467	40,006	39,267
11	41,526	38,467	41,169	38,427	40,955
12	43,337	42,179	40,017	42,126	39,623
13	41,492	44,513	43,749	41,773	43,860
14	44,782	42,611	45,026	44,453	42,356
15	47,206	46,443	44,365	46,814	46,345
16	48,953	48,127	47,560	45,172	45,492
17	47,436	48,241	50,292	49,871	49,524
18	50,787	50,364	48,278	48,465	48,487
19	53,256	52,776	52,422	52,179	51,991
20	56,067	55,514	55,097	54,804	54,573
<hr/>					
Total	813,151	806,491	800,452	796,783	792,670
Average	40,658	40,325	40,023	39,839	39,634
P.V.	584,851	579,983	575,503	573,005	569,945
Annuity	39,311	38,984	38,683	38,515	38,309

**D: Total Family Income
Army Enlisted**

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	17,535	17,535	17,535	17,535	17,535
2	20,588	20,588	20,588	20,588	20,588
3	21,858	21,858	20,138	19,698	19,478
4	22,951	20,265	21,464	21,620	21,739
5	20,518	22,332	22,576	22,743	20,720
6	23,169	23,505	21,096	21,153	22,925
7	24,337	22,589	23,431	23,785	22,189
8	25,492	24,084	24,524	22,757	24,045
9	23,143	25,281	23,630	24,836	23,638
10	25,804	26,489	25,485	26,008	25,298
11	27,270	24,706	26,907	24,666	26,689
12	28,392	27,257	25,628	27,211	25,241
13	26,011	28,526	27,749	26,306	27,868
14	28,581	26,932	28,837	28,235	26,664
15	29,897	29,135	27,587	29,514	29,042
16	31,089	30,273	29,698	27,828	28,162
17	28,657	29,474	30,997	30,576	30,224
18	31,697	31,272	29,717	29,908	29,932
19	33,296	32,826	32,475	32,232	32,042
20	34,526	34,030	33,653	33,388	33,179
Total	524,810	518,955	513,716	510,587	507,197
Average	26,240	25,948	25,686	25,529	25,360
P.V.	379,623	375,376	371,506	369,395	366,897
Annuity	25,517	25,231	24,971	24,829	24,661

**E: Total Family Income
Navy Officers**

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	26,028	26,028	26,028	26,028	26,028
2	31,385	31,385	31,385	31,385	31,385
3	33,714	33,714	31,558	31,069	30,817
4	35,223	32,062	33,652	33,816	33,941
5	32,313	34,556	34,807	34,978	32,508
6	35,451	35,784	32,958	33,001	35,187
7	38,683	36,505	37,731	38,094	36,072
8	39,725	38,286	38,728	36,535	38,231
9	37,378	39,915	37,845	39,468	37,841
10	42,278	42,942	41,955	42,459	41,762
11	44,249	41,356	43,906	41,313	43,698
12	46,478	45,384	43,339	45,328	42,962
13	43,778	46,630	45,904	44,035	46,003
14	48,146	46,094	48,366	47,831	45,850
15	50,151	49,407	47,439	49,757	49,299
16	52,259	51,468	50,925	48,662	48,963
17	49,834	50,612	52,543	52,129	51,787
18	54,479	54,070	52,096	52,268	52,283
19	54,668	54,196	53,847	53,606	53,419
20	59,057	58,501	58,081	57,783	57,547
<hr/>					
Total	855,277	848,897	843,092	839,546	835,584
Average	42,764	42,445	42,155	41,977	41,779
P.V.	614,470	609,820	605,523	603,110	600,172
Annuity	41,302	40,989	40,701	40,538	40,341

F: Total Family Income
Navy Enlisted

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	18,064	18,064	18,064	18,064	18,064
2	20,644	20,644	20,644	20,644	20,644
3	22,076	22,076	20,615	20,207	20,000
4	23,364	21,017	21,993	22,135	22,243
5	21,574	23,119	23,343	23,496	21,749
6	23,848	24,158	22,055	22,094	23,601
7	24,957	23,466	24,104	24,429	23,078
8	26,534	25,183	25,598	24,081	25,128
9	24,533	26,385	24,980	25,953	24,975
10	26,898	27,539	26,581	27,069	26,389
11	28,320	26,045	27,957	25,990	27,733
12	29,607	28,527	27,140	28,465	26,757
13	27,572	29,787	29,036	27,825	29,129
14	30,063	28,653	30,282	29,699	28,365
15	31,511	30,753	29,439	31,096	30,625
16	32,904	32,085	31,506	29,873	30,186
17	31,022	31,806	33,067	32,640	32,283
18	33,482	33,042	31,714	31,883	31,888
19	35,419	34,925	34,552	34,288	34,080
20	37,468	36,931	36,521	36,225	35,989
<hr/>					
Total	549,858	544,206	539,191	536,156	532,908
Average	27,493	27,210	26,960	26,808	26,645
P.V.	396,580	392,522	388,853	386,816	384,450
Annuity	26,656	26,384	26,137	26,000	25,841

G: Total Family Income
Marine Officers

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	25,420	25,420	25,420	25,420	25,420
2	30,015	30,015	30,015	30,015	30,015
3	31,357	31,357	29,256	28,778	28,530
4	32,831	29,762	31,311	31,469	31,590
5	31,414	33,600	33,847	34,014	31,604
6	35,094	35,420	32,664	32,704	34,833
7	36,848	34,734	35,944	36,288	34,321
8	38,870	37,463	37,893	35,757	37,405
9	36,329	38,799	36,782	38,361	36,777
10	39,227	39,894	38,900	39,405	38,704
11	41,262	38,440	40,924	38,396	40,719
12	44,177	43,091	41,097	43,033	40,720
13	42,205	44,995	44,275	42,455	44,370
14	45,483	43,481	45,700	45,165	43,233
15	47,444	46,709	44,792	47,051	46,598
16	49,608	48,814	48,268	46,054	46,353
17	47,719	48,487	50,365	49,954	49,614
18	51,893	51,476	49,549	49,720	49,734
19	54,356	53,874	53,518	53,271	53,079
20	55,595	55,042	54,623	54,326	54,090
<hr/>					
Total	817,146	810,872	805,141	801,634	797,710
Average	40,857	40,544	40,257	40,082	39,885
P.V.	587,105	582,544	578,311	575,926	573,019
Annuity	39,463	39,156	38,872	38,711	38,516

H: Total Family Income
Marine Enlisted

<u>Year</u>	<u>Number of Moves</u>				
	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1	17,699	17,699	17,699	17,699	17,699
2	20,220	20,220	20,220	20,220	20,220
3	21,484	21,484	20,118	19,747	19,559
4	22,620	20,429	21,350	21,481	21,581
5	20,833	22,278	22,482	22,621	20,991
6	23,128	23,411	21,456	21,490	22,901
7	24,224	22,826	23,438	23,737	22,468
8	25,469	24,243	24,619	23,200	24,191
9	23,668	25,399	24,079	24,998	24,073
10	25,799	26,391	25,503	25,953	25,323
11	27,504	25,354	27,157	25,299	26,941
12	28,399	27,386	26,080	27,325	25,718
13	26,552	28,625	27,925	26,784	28,009
14	28,749	27,422	28,951	28,404	27,148
15	30,095	29,374	28,135	29,694	29,246
16	31,299	30,521	29,971	28,430	28,724
17	29,316	30,038	31,222	30,826	30,495
18	31,878	31,471	30,221	30,373	30,375
19	33,660	33,195	32,844	32,594	32,396
20	34,989	34,483	34,095	33,815	33,590
<hr/>					
Total	527,586	522,250	517,564	514,690	511,647
Average	26,379	26,113	25,878	25,735	25,582
P.V.	381,207	377,382	373,959	372,032	369,818
Annuity	25,623	25,366	25,136	25,006	24,858

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This study analyzes the effect varying the number of permanent change of station (PCS) moves during a 20 year military career has on total family income. The number of PCS moves was varied from 5 to 9 over the 20 years to determine the effect on officer and enlisted family income for each of the services. This study limited the population to male military members married to civilian wives. Also, only PCS moves where the wife accompanies the member were considered.

This study identified 4 items that can affect family income as a result of a PCS move. First, the family may have moving expenses that are not reimbursed by the government. Second, if the wife works, she must quit her job and suffer a period of unemployment. Third, the wife must seek employment at the new location. Usually, the new job will pay less than the old job due to foregone tenure. Finally, the military member may have a change in part-time income if he works during his off-duty time.

Unreimbursed moving expenses were calculated from data obtained by the Air Force Manpower and Personnel Center in the 1987 PCS Cost Survey. The other components of family income were calculated using data from the 1985 DOD Survey of Officer and Enlisted Personnel and the 1985 DOD Survey of Military Spouses. When possible, equations were derived to predict the probability of working and the income earned from a job. Using these figures, expected family income was calculated for each of the 20 years in the career. Then, a yearly income annuity was calculated for the sum of the present value of the yearly incomes.

Key concern ↗

Each additional PCS move during a 20 year career decreases the yearly family income annuity by approximately \$200. Increasing the frequency of PCS moves has a greater income impact on officer families than enlisted families.